

# BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

DIAMOND HEAD, HONOLULU, HAWAII

## JOB NO. CA-2917

STATE OF HAWAII  
DEPARTMENT OF DEFENSE  
HAWAII ARMY NATIONAL GUARD

### DESIGN TEAM

#### ARCHITECT:

RICHARD MATSUNAGA &  
ASSOCIATES ARCHITECTS, INC.  
1150 S. KING STREET 8TH FLOOR  
HONOLULU, HI 96814  
PH: (808) 591-1818

#### MECHANICAL:

MIYASHIRO & ASSOCIATES, INC.  
850 RICHARDS STREET, PENTHOUSE  
HONOLULU, HI 96813  
PH: (808) 536-8317

#### CIVIL:

KENNEDY / JENKS CONSULTANTS  
3375 Koapaka Street, Suite F227  
Honolulu, HI 96819  
PH: (808) 488-0477

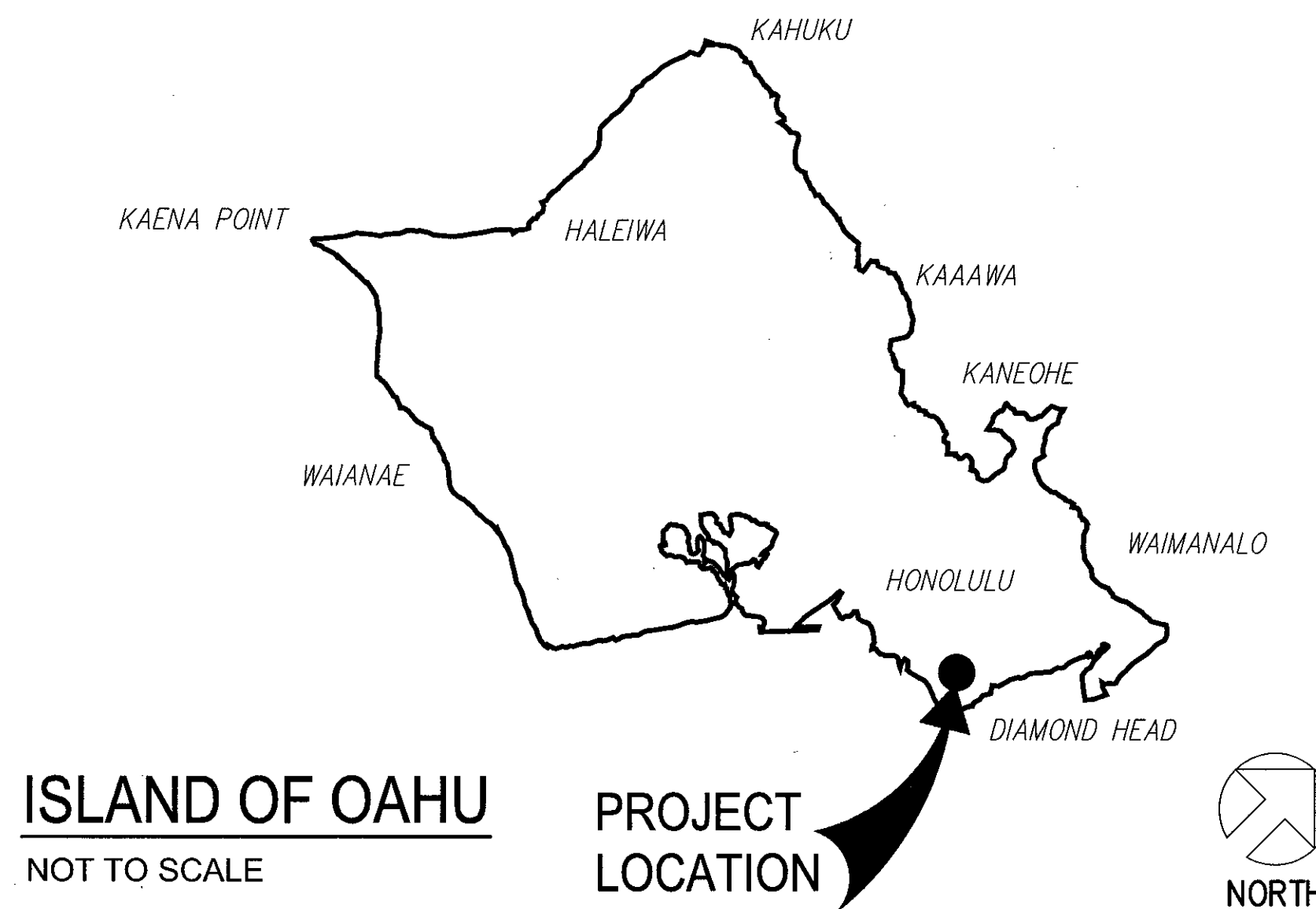
#### ELECTRICAL:

ECS, INC.  
615 PIIKOI STREET, SUITE 207  
HONOLULU, HI 96814  
PH: (808) 591-8181

#### STRUCTURAL:

KAI HAWAII  
31 N. PAUAAHI STREET, 2ND FLOOR  
HONOLULU, HI 96817  
PH: (808) 533-2210

### LOCATION MAP

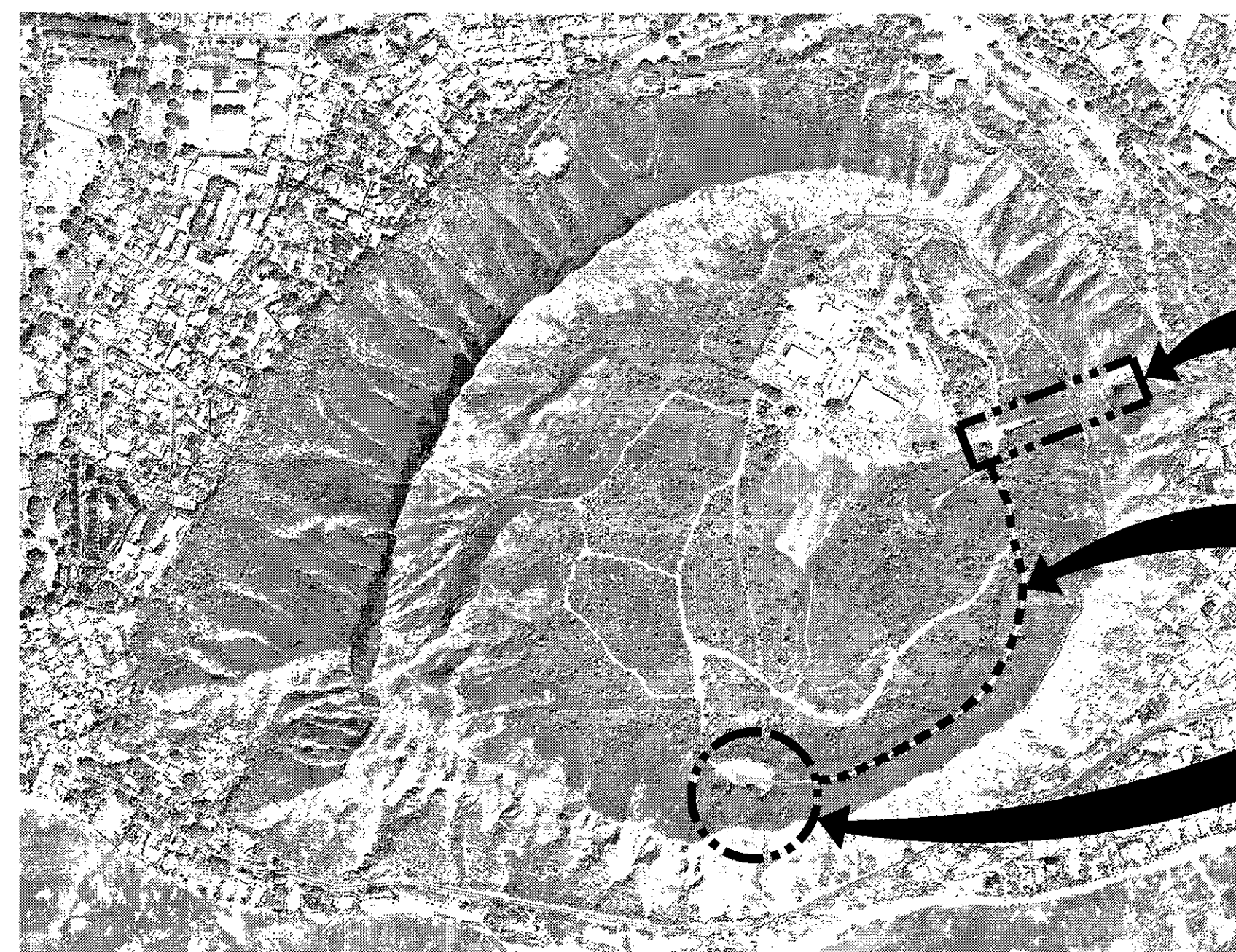


### PROJECT DATA

#### ZONING DATA

- I. PROJECT INFORMATION:
- A. PROJECT LOCATION: BLDG 407 (BATTERY 407)  
DIAMOND HEAD, HONOLULU, HAWAII
  - B. TAX MAP KEY: 3-1-042:006
  - C. BLDG AREA: TUNNEL 1 = 7,117 S.F.  
TUNNEL 1/2 = 4,485 S.F.  
TUNNEL 2 = 4,367 S.F.  
TOTAL = 15,969 S.F.
  - D. ZONING: P-2 / P-1
  - E. FLOOD ZONE: X
  - F. HEIGHT LIMIT: 25'
  - G. HISTORICAL REGISTER: YES
  - H. LOT RESTRICTIONS: NONE
  - I. SMA/ SHORELINE: SPECIAL MANAGEMENT AREA
  - J. SPECIAL DISTRICT: DIAMOND HEAD SPECIAL DISTRICT
  - K. STATE LAND USE: CONSERVATION DISTRICT
  - L. STREET SETBACK: YES - SEE DTS MAP PUC-17

### PROJECT SITE MAP



PROJECT SITE ENTRANCE

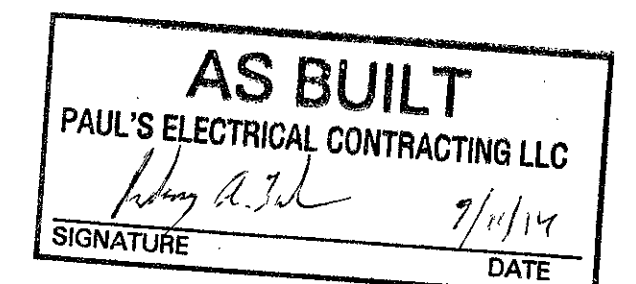
SITE ENTRANCE ROAD

PROJECT SITE LOCATION



PROJECT SITE MAP

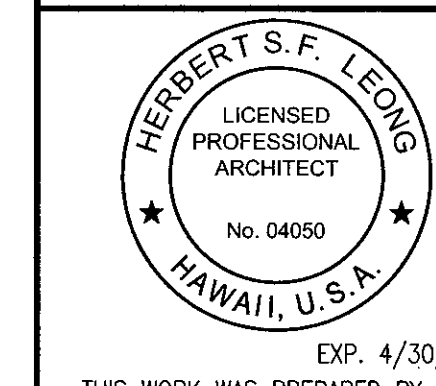
NOT TO SCALE



REVISION NO	DESCRIPTION	DATE	BY	CHK'D

DESIGNED: HL		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DRAWN: MK, RV	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE		
TITLE SHEET			
APPROVED: 154 GP / BCE	APPROVED: 154 GP / CC	DATE: JAN. 31, 2011	
APPROVED: 154 GP / CC	APPROVED: 154 GP / CC	SCALE:	
APPROVED: 154 GP / CC	APPROVED: 154 GP / CC	DWG # T-1	
APPROVED: 154 GP / CC	APPROVED: 154 GP / CC	SHEET 1 OF 57	



IF SHEET IS LESS THAN  
22 x 34  
IT IS A REDUCED PRINT-  
SCALE REDUCED ACCORDINGLY

The Contractor will be responsible  
for coordinating the work among  
the various trades as necessary  
to avoid conflicts and to insure  
the installation of oil work within  
the available space.

EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME  
OR UNDER MY SUPERVISION



**ABBREVIATIONS**

AB ANCHOR BOLT  
 A/C AIR CONDITIONING  
 AC ASPHALT CONCRETE  
 ACOUS ACOUSTICAL  
 ADA AMERICANS WITH DISABILITIES ACT  
 ADAAG AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES  
 ADJ ADJUSTABLE  
 AFF ABOVE FINISH FLOOR  
 ALUM ALUMINUM  
 APPROX APPROXIMATE  
 ARCH ARCHITECTURAL or ARCHITECT  
 BD BOARD  
 BLDG BUILDING  
 BLK BLOCK  
 BLKG BLOCKING  
 BM BEAM  
 BOT BOTTOM  
 CAB CABINET  
 CL CENTER LINE  
 CLG CEILING  
 CLR CLEAR  
 CMU CONCRETE MASONRY UNIT  
 COL COLUMN  
 CONC CONCRETE  
 CONT CONTINUOUS  
 DET DETAIL  
 DIA OR Ø DIAMETER  
 DIM DIMENSION  
 DR DOOR  
 DWGS DRAWINGS  
 EA EACH  
 EJ EXPANSION JOINT  
 ELEV ELEVATION  
 ELEC ELECTRICAL  
 EQ EQUAL  
 EQPT EQUIPMENT  
 EXP EXPANSION  
 E OR EXST EXISTING  
 EXT EXTERIOR  
 FFL FINISH FLOOR LEVEL  
 FND FOUNDATION  
 FIN FINISH  
 FT FEET  
 FTG FOOTING

GA GAUGE  
 GALV GALVANIZE  
 GFCI GROUND FAULT CIRCUIT INTERRUPTOR or GVERNMENT FURNISHED CONTRACTOR INSTALLED  
 GND GROUND  
 GYP GYPSUM  
 H HIGH  
 HB HOSE BIB  
 HC HOLLOW CORE  
 HD HEAD  
 HDW HARDWARE  
 HDWD HARDWOOD  
 HM HOLLOW METAL  
 HT HEIGHT  
 INT INTERIOR  
 JB JUNCTION BOX  
 JT JOINT  
 LAM LAMINATE  
 MAX MAXIMUM  
 MECH MECHANICAL  
 MET METAL  
 MFR/MANUF MANUFACTURER  
 MIN MINIMUM  
 MISC MISCELLANEOUS  
 MO MASONRY OPENING  
 NO OR # NUMBER  
 NTS NOT TO SCALE  
 OC ON CENTER  
 PL PLATE  
 PLAS LAM PLASTIC LAMINATE  
 PLYWD PLYWOOD  
 PNL PANEL  
 RAD/R RADIUS  
 REINF REINFORCEMENT  
 REQ REQUIRED  
 RM ROOM

SATC SUSPENDED ACOUSTICAL TILE CEILING  
 SC SOLID CORE  
 SHT SHEET  
 SIM SIMILAR  
 SL SLOPE  
 SPEC SPECIFIED or SPECIFICATIONS  
 STL STEEL  
 STRUCT STRUCTURAL  
 SUSP SUSPENDED  
 THK THICK  
 TYP/(TYP) TYPICAL  
 UNO UNLESS NOTED OTHERWISE  
 W/ WITH  
 W/O WITHOUT  
 WD WOOD  
 WWF WELDED WIRE FABRIC  
 WWM WELDED WIRE MESH

**GENERAL NOTES**

- CONSTRUCTION DOCUMENTS REASONABLY DESCRIBE THE INTENT OF THE QUALITY AND SCOPE OF THE CONSTRUCTION FOR THE PROJECT. WHERE DETAILS ARE NOT SHOWN, THE CONTRACTOR SHALL PROCEED FOLLOWING THE ACCEPTED QUALITY STANDARDS AND PROCEDURES OF THE CONSTRUCTION INDUSTRY IN THE STATE OF HAWAII AS WELL AS THE GENERAL INTENT OF THE CONSTRUCTION DOCUMENTS. SUBMIT CLARIFICATION REQUEST(S) TO THE ENGINEER FOR REVIEW AND DIRECTION BEFORE PROCEEDING.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, AND CONDITIONS PRIOR TO BEGINNING ANY WORK AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCY AND/OR CONDITION WHICH WILL PREVENT FULFILLMENT OF THE TERMS OF THE CONTRACT. WHERE CONDITIONS REQUIRE DETAILS AND/OR SPECIFICATIONS TO VARY FROM THE CONSTRUCTION DOCUMENTS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND PROPOSE ALTERNATE METHODS AND MATERIALS FOR CONSIDERATION.
- QUANTITIES SHOWN AND/OR SPECIFIED IN THE DRAWINGS AND SPECIFICATIONS SHALL BE VERIFIED BY THE CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL QUANTITIES.
- GENERAL CONTRACTOR SHALL REVIEW ALL SUBMITTALS AND COORDINATE THE WORK OF THE VARIOUS TRADES TO FIT ACTUAL CONDITIONS AND MAKE INTERFACING ADJUSTMENTS AS REQUIRED.
- CONSTRUCTION SHALL COMPLY WITH THE 2003 UNIFORM BUILDING CODE (UBC), HRS 103-50; THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINES (ADAAG) FOR BUILDINGS AND FACILITIES, DISABILITY AND COMMUNICATION ACCESS BOARD'S INTERPRETIVE OPINIONS, AND APPLICABLE CODES IN OTHER DISCIPLINES (i.e. MECH, ELEC) AS LISTED IN THEIR NOTES AND SPECIFICATIONS.
- DIMENSIONS:
- DIMENSIONS ARE MEASURED TO FRAMING MEMBERS UNLESS NOTED OTHERWISE.
- DIMENSIONS SHALL HAVE PRECEDENCE OVER SCALE.
- DIMENSIONS SHALL BE VERIFIED IN THE FIELD BEFORE PROCEEDING WITH THE WORK.
- (E) MEANS "EXISTING" DIMENSION. CONTRACTOR SHALL VERIFY EXISTING DIMENSIONS AND CONFIRM SIZES.
- ± (PLUS OR MINUS) DIMENSION SHALL BE VERIFIED BY THE CONTRACTOR.
- MATERIALS, ITEMS, WORK, NOTED IN THE DRAWINGS SHALL BE "NEW", UNLESS OTHERWISE INDICATED AS EXISTING.
- "REPLACE" MEANS TO REMOVE EXISTING ITEM(S) AND TO PROVIDE NEW ITEM(S) AS INDICATED (i.e. MATERIAL, THICKNESS, COLOR, QUALITY, CONSTRUCTION, ETC.), UNLESS OTHERWISE DETAILED OR NOTED. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITION AND DESIGN PRIOR TO REMOVAL.
- "RENEW" SHALL MEAN REMOVE EXISTING ITEM(S), AND PROVIDE NEW ITEM(S) TO SIMILARLY MATCH THE ORIGINAL CONSTRUCTION(i.e. MATERIAL, THICKNESS, FINISH, COLOR, ETC.) FIELD VERIFY EXISTING CONDITIONS.
- "PROVIDE" SHALL MEAN FURNISH AND INSTALL NEW ITEM(S) AS INDICATED.
- THE CONTRACTOR SHALL PROTECT ALL ITEMS, IN AND ABOVE GROUND WITHIN THE PROJECT SITE FROM DAMAGE. DAMAGE TO BUILDINGS, SIDEWALKS, LANDSCAPING, LAWN, HOSEBIBS, AND OVERPAINTED ITEMS, SHALL BE REPLACED AND/OR REPAIRED TO MATCH EXISTING MATERIAL/FINISHES AT NO EXTRA COST TO THE GOVERNMENT.
- ALL ITEMS TO BE REMOVED, OR TEMPORARILY REMOVED AND REINSTALLED, ARE NOT NECESSARILY SHOWN. CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR, AND EQUIPMENT NECESSARY TO REMOVE, TEMPORARY REMOVE, REPLACE, RE-INSTALL, CUT/PATCH, PREPARATION, ETC., AS REQUIRED TO FACILITATE THE PROGRESSION OF THE WORK. VISIT SITE TO VERIFY EXISTING CONDITIONS AND VERIFY AND COMPARE DRAWINGS AND SPECS OF ALL DISCIPLINES TO UNDERSTAND AND COORDINATE THE SCOPE OF DEMOLITION, REMOVAL, TEMPORARY REMOVAL AND REPLACEMENT, CUTTING, PATCHING, PREPARATION, ETC., WORK.
- THE CONTRACTOR SHALL PROMPTLY REMOVE & DISPOSE OF ALL WASTE MATERIAL OUTSIDE THE LIMITS OF THE PROJECT SCOPE.
- ALL BUILDINGS, ROOMS AND SPACES ARE EXISTING UNLESS NOTED OTHERWISE.

**GENERAL SCOPE OF WORK**

- SITE IMPROVEMENTS INCLUDE A NEW CMU EMERGENCY GENERATOR BLDG. BETWEEN THE BASE OF RIDGE AND THE EXISTING SEWER LINE. INCLUDING AN AC ACCESSWAY FROM THE PARKING LOT AND BLDG. ALSO, CONCRETE SLABS FOR REDUNDANT EMERGENCY GENERATOR AND FUEL TANK. MINIMAL SITE GRADING AND DRAINAGE WORK. DEMOLITION INCLUDES, REMOVAL OF EXISTING GENERATOR BLDG., SLABS AND FENCE.
- INTERIOR IMPROVEMENTS CONSISTS OF WORK IN ROOMS 112, 103 AND 104. INCLUDING NEW SATC CEILINGS, A/C SYSTEMS, WALL, ELECTRICAL RECEPTACLES AND POWER DISTRIBUTION INCLUDING REWORK OF CABLES, WIRES AND ETC. DEMOLITION INCLUDES REMOVAL OF EXST. CRANE RAIL AND PATCH CEILING.
- CUT OPENING IN CONCRETE WALL AT ROOMS 108 AND 109. FRAME OPENING WITH WOOD.
- ADD NEW LIGHTING FIXTURES AND EMERGENCY LIGHTING THROUGHOUT. INCLUDING REWORK OF ANY ELECTRICAL CABLES, CABLE TRAYS, DISTRIBUTION PANELS, WIRING, CONDUIT AND ETC. REPLACE EXST. TRANSFORMER WITH NEW ONE.

**SPECIAL PROJECT PROCEDURES**

- WORK AT ROOMS 103, 104, 108/109 AND 112:
  - CONTRACTOR IS NOT ALLOWED TO WORK ON MORE THAN ONE ROOM AT A TIME. ONE ROOM MUST BE COMPLETED BEFORE STARTING THE NEXT ROOM. NO EXCEPTIONS.
  - PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL SUBMIT A CONSTRUCTION SCHEDULE TO THE CONTRACTING OFFICER FOR APPROVAL SHOWING WHEN EACH ROOM WILL BE WORKED ON. CONSTRUCTION MUST BE COORDINATED WITH USER AS OPERATIONS ARE ON GOING 24/7.
  - CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER 14 DAYS PRIOR TO STARTING WORK IN ROOM. NOTIFICATION SHALL INCLUDE OUTAGES TO POWER, LIGHTING AND AIR CONDITIONING AND DOWNTIME IMPACT TO OTHER ROOMS. PROVIDE TEMPORARY SERVICES TO OTHER ROOMS WHEN REQUESTED BY CONTRACTING OFFICER.
  - USERS WILL RELOCATE ROOM OCCUPANTS AND EQUIPMENT TEMPORARILY DURING CONSTRUCTION OF ROOM. CONTRACTOR SHALL PROTECT REMAINING EQUIPMENT IN THE ROOM FROM DUST AND DAMAGE DURING CONSTRUCTION.
- THE EXISTING ELECTRICAL SYSTEM (INCLUDING EXST EMERGENCY SYSTEM) SHALL REMAIN IN OPERATION UNTIL THE NEW ELECTRICAL SYSTEM (INCLUDING NEW EMERGENCY SYSTEM) HAS BEEN CONNECTED TO REMAINING EXISTING ELECTRICAL SYSTEMS AND THE NEW/REMAINING ELECTRICAL SYSTEM IS IN OPERATION. AFTER THE NEW EMERGENCY SYSTEM IS TESTED, APPROVED AND OPERATIONAL, THE EXISTING GENERATOR, BUILDING AND ACCESSORIES CAN BE DEMOLISHED.
- CLEAN ROOM(S) (LIGHTS, CEILING, WALLS, FLOOR, FURNITURE, EQUIPMENT) AFTER CONSTRUCTION TO REMOVE CONSTRUCTION DUST AND DEBRIS.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 SIGNATURE: *Paul S. Leung* DATE: 7/11/12

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

**RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.**

**DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII**

**DESIGNED: HL**  
**DRAWN: MK, RV**  
**SAFETY:**  
**SECURITY:**

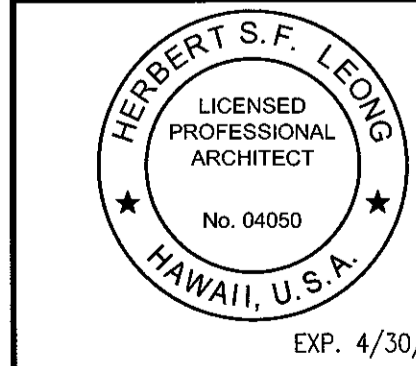
**BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE**

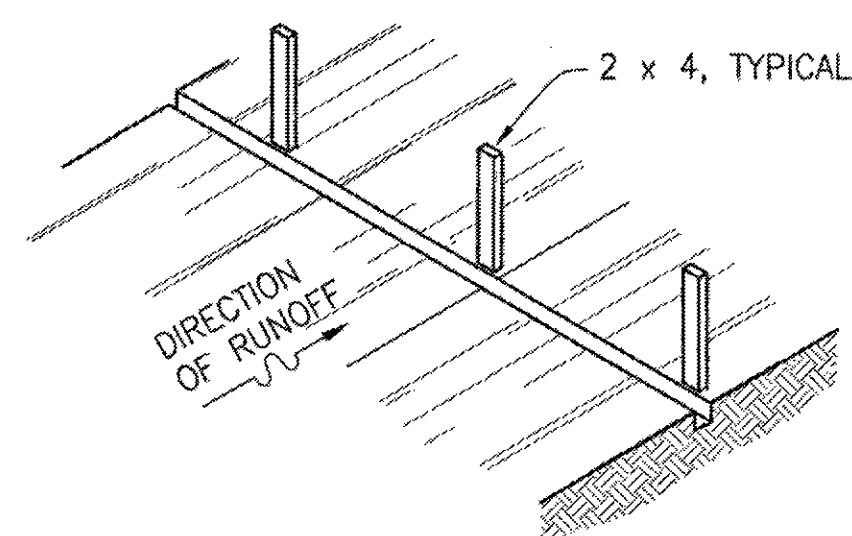
**GENERAL NOTES, SCOPE OF WORK AND ABBREVIATIONS**

APPROVED: \_\_\_\_\_ DATE: JAN. 31, 2011  
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 154 GP / CC  
 SCALE:  
 HANG / CC  
 HANG / COE  
 DWG # T-3  
 APPROVED: \_\_\_\_\_  
 TAG - HMMW 154 CES / CEC PROJ ENGR SHEET 3 of 57

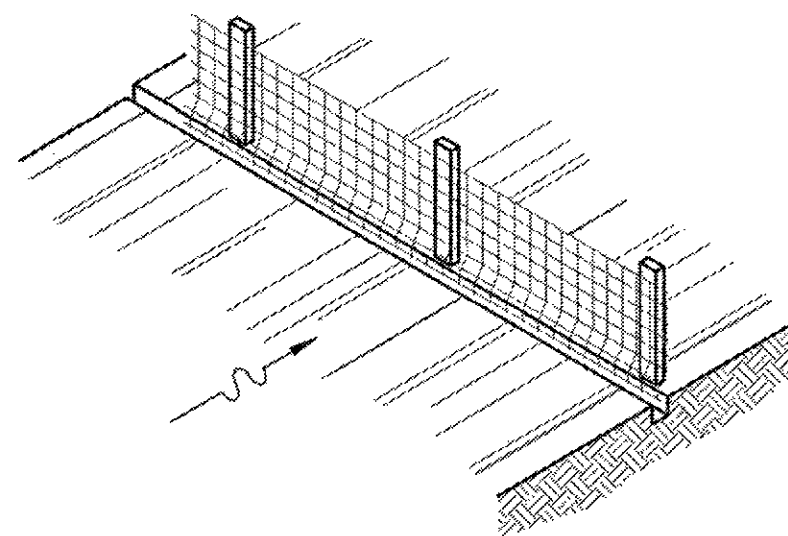
IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

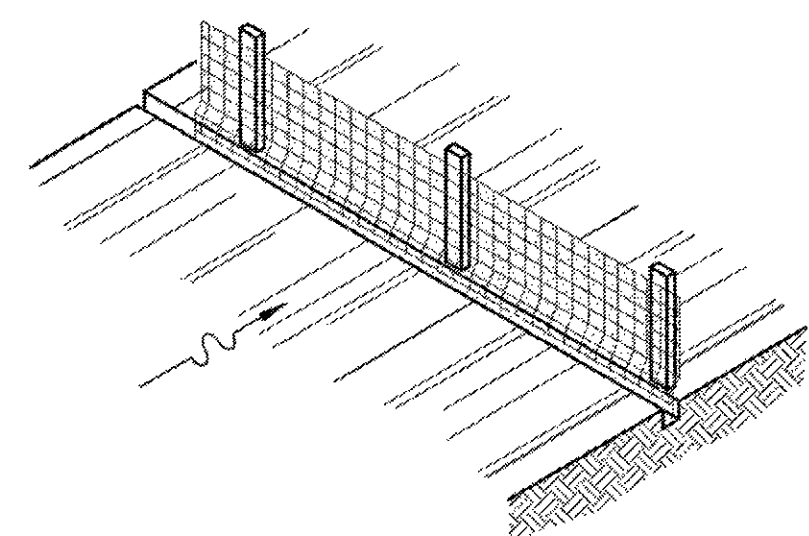




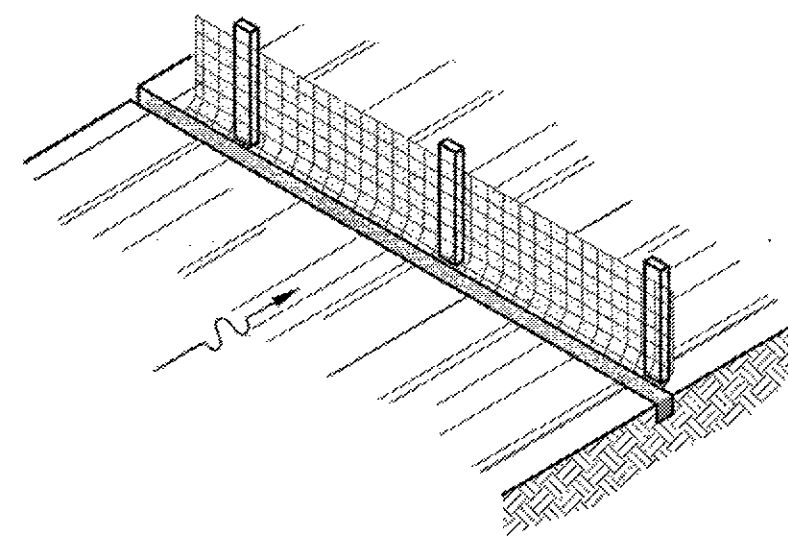
1. SET POSTS AND EXCAVATE A 6" x 6" TRENCH UP-SLOPE ALONG THE LINE OF POSTS.



2. STAPLE WIRE FENCING TO THE POSTS.



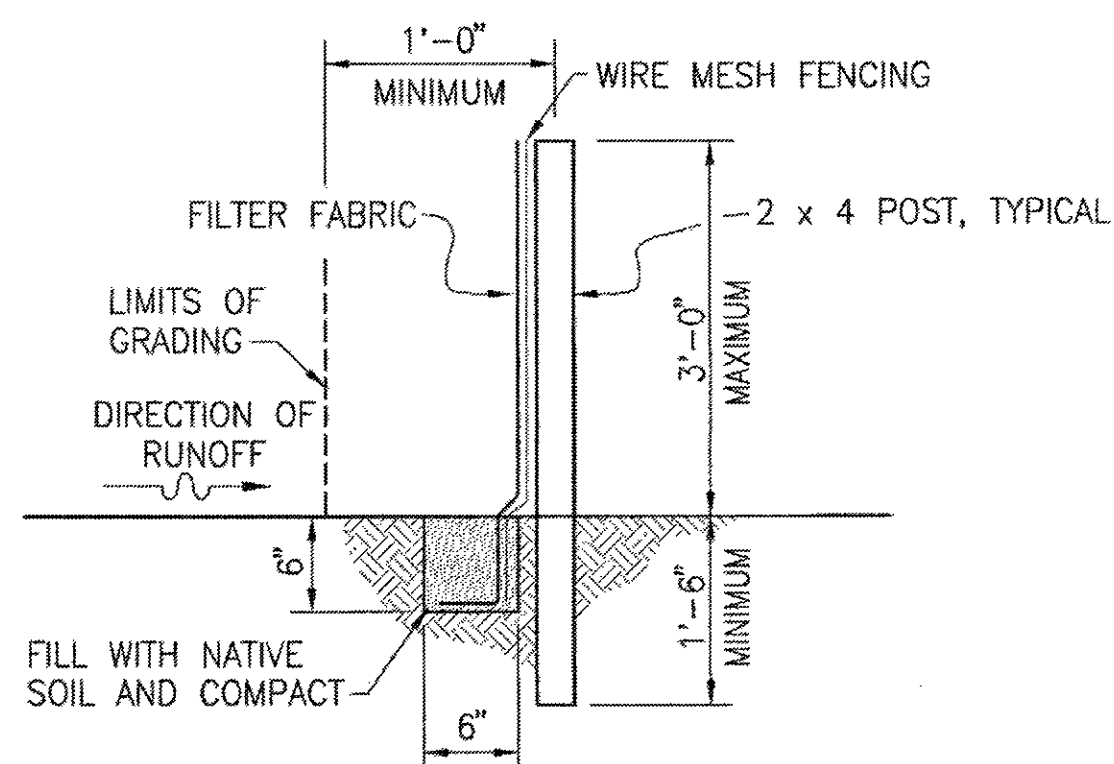
3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.

**SILT FENCE NOTES:**

- THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 36 INCHES (HIGHER FENCES MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE).
- THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND SECURELY SEALED.
- POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 18 INCHES). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET. POSTS SHALL BE PRESERVATIVE TREATED.
- A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER.
- A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
- THE FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 8 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
- THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
- SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
- FILTER FABRIC SHALL BE MIRAFI SILT FENCE, AMOCO SILT STOP (WIDTH 3'-6") #1380 OR APPROVED EQUAL.



**TYPICAL SECTION**

**MAINTENANCE:**

- SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
- SHOULD THE FABRIC ON A SILT FENCE DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
- SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT. SEDIMENT SHALL BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
- ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.

**1 SILT FENCE DETAIL**  
EC-1 NOT TO SCALE

**BEST MANAGEMENT PRACTICE (BMP) NOTES:**

- TEMPORARY EROSION CONTROLS SHALL BE IN PLACE PRIOR TO ANY CONSTRUCTION WORK.
- CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE STABILIZED WITH 8" THICK CRUSH ROCK NO. 2 AT POINT OF CONSTRUCTION STAGING AREA. MAINTAIN THROUGHOUT PROJECT. AT THE COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL RESTORE ALL PAVEMENT, WALKWAYS, AND OTHER SURFACE FEATURES TO ITS ORIGINAL CONDITION.
- AT THE END OF CONSTRUCTION OPERATIONS, EXISTING DRAINAGE FACILITIES SURROUNDING THE PROJECT SITE SHALL BE INSPECTED AND ANY ACCUMULATED SEDIMENT AND DEBRIS FOUND IN THE INLETS SHALL BE REMOVED. FLUSHING DOWN THE DRAINAGE FACILITY IS PROHIBITED.
- TEMPORARY EROSION CONTROLS SHALL REMAIN IN PLACE UNTIL PERMANENT LANDSCAPING IS ESTABLISHED.

**ABBREVIATIONS**

#, NO.	NUMBER
A/C	AIR CONDITIONING
A.C.	ASPHALTIC CONCRETE
BFP	BACKFLOW PREVENTER
BMP	BEST MANAGEMENT PRACTICE
BOT	BOTTOM
BWS	BOARD OF WATER SUPPLY
C.L.	CHAIN LINK
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
D, DIA	DIAMETER
E, ELEC	ELECTRICAL
ELEV	ELEVATION
EXIST	EXISTING
FF	FINISHED FLOOR
FLR	FLOOR
GND	GROUND
H	HEIGHT
HB	HOSE BIBB
INV	INVERT
L.P.	LIGHT POLE
MAX	MAXIMUM
MIN	MINIMUM
O.C.	ON CENTER
O.D.	OUTER DIAMETER
PAV'T	PAVEMENT
S	SEWER
SC	SIGNAL CORPS
SCMH	SIGNAL CORPS MANHOLE
SMH	SEWER MANHOLE
STA	STATION
TP	TOP PIPE
TC	TOP OF CONCRETE
W	WATER
W.L.	WATER LINE
WM	WATER METER

**CIVIL LEGEND**

	EXISTING	PROPOSED
A.C. PAVEMENT	[Symbol]	[Symbol]
BUILDING	[Symbol]	[Symbol]
CONCRETE	[Symbol]	[Symbol]
GRAVEL	[Symbol]	[Symbol]
WATER LINE WITH SIZE & VALVE	W <sub>8</sub>	W <sub>1</sub>
FUEL LINE WITH SIZE		F <sub>2</sub>
CONTOUR AND ELEVATION (FEET)	40	40
SPOT ELEVATION	39.00	39.00
SILT FENCE	[Symbol]	[Symbol]
TO BE REMOVED	[Symbol]	[Symbol]

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
Signature: [Signature] DATE: 7/11/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: DA  
DRAWN: CY  
SAFETY: [Blank]  
SECURITY: [Blank]

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

EROSION CONTROL, NOTES AND DETAILS, ABBREVIATIONS, AND LEGEND

APPROVED: [Signature] DATE: JAN. 31, 2011

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION BY [Signature] DATE: APRIL 30, 2012 EXPIRATION DATE OF THE LICENSE

154 OF / RSE  
154 OF / CC  
154 OF / CC  
154 OF / CC

SCALE: EC-1

SHEET 4 of 57

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**CONSTRUCTION NOTES:**

- ALL APPLICABLE CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1986, AND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984, AS AMENDED, OF THE DEPARTMENTS OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU, AND THE COUNTIES OF KAUAI, MAUI, AND HAWAII.
- THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES, APPURTENANCES AND STRUCTURES AS SHOWN ON THESE DRAWINGS WERE COMPILED FROM TOPOGRAPHIC SURVEY PREPARED BY CONTROLPOINT SURVEYING, INC. PROJECT NO. 09161, JUNE 21, 2010, RECORD DRAWINGS PROVIDED BY UTILITY AND GOVERNMENT AGENCIES AND FROM THE ENGINEER'S MEASUREMENTS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL PAY FOR ALL DAMAGES TO THE EXISTING UTILITIES. THE CONTRACTOR SHALL NOT ASSUME THAT WHERE NO UTILITIES ARE SHOWN, THAT NONE EXIST.
- THE CONTRACTOR/DEVELOPER SHALL OBTAIN ALL PERMITS AND LICENSES, PAY ALL CHARGES, FEES AND TAXES, GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK AS DRAWN AND SPECIFIED.
- WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
- WHEN TRENCH EXCAVATION IS ADJACENT TO OR UNDER EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE FROM POSSIBLE SLIDES, CAVE-INS AND SETTLEMENT AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDER-PINNING TO FULLY PROTECT THEM FROM DAMAGE.
- BACKFILL UNDER EXISTING STRUCTURES OR FACILITIES SHALL BE SANDY OR GRANULAR MATERIAL COMPLETELY PLACED AS SOON AS THE PIPE IS LAID AND TESTED. THE BACKFILL MATERIAL SHALL BE RAMMED WITH PROPER TOOLS UNTIL COMPACTED TO 90 TO 95 PERCENT OF ITS MAXIMUM DENSITY.
- VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER.
- THE CONTRACTOR SHALL NOTIFY ALL AGENCIES TO VERIFY THE ACTUAL LOCATIONS OF ALL UTILITIES IN THE PROJECT AREA PRIOR TO EXCAVATING. THE CONTRACTOR SHALL COORDINATE ALL WORK.
- THE CONTRACTOR SHALL RESTORE TO THEIR ORIGINAL CONDITION ALL IMPROVEMENTS DAMAGED AS A RESULT OF THE CONSTRUCTION, INCLUDING PAVEMENTS, EMBANKMENTS, CURBS, SIGNS, LANDSCAPING, STRUCTURES, UTILITIES, WALLS, FENCES, ETC.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING/RECONSTRUCTING ALL CONCRETE WALKWAYS DAMAGED DURING CONSTRUCTION.
- FOR BENCH MARK, SEE SHT C-2.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER QUALITY AND WATER POLLUTION CONTROL STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS" AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL", AS WELL AS CHAPTER 14 OF THE REVISED ORDINANCES OF HONOLULU 1990, AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.
- NO CONTRACTOR SHALL PERFORM ANY CONSTRUCTION OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW INTO EXISTING CITY DRAINAGE SYSTEMS, OR ADJOINING PROPERTIES, STREETS OR NATURAL WATER COURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.
- IN THE EVENT THAT ANY PREVIOUSLY UNIDENTIFIED ARCHAEOLOGICAL SITES OR REMAINS (SUCH AS ARTIFACTS, SHELLS, BONE OR CHARCOAL DEPOSITS, HUMAN BURIALS, ROCK OR CORAL ALIGNMENTS, PAVINGS, OR WALLS) ARE ENCOUNTERED, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE HONOLULU POLICE DEPARTMENT, STATE DEPARTMENT OF LAND AND NATURAL RESOURCES, HISTORIC PRESERVATION DIVISION (692-8015), AND THE CIVIL ENGINEERING BRANCH, D.P.P. (523-4881). WORK IN THE IMMEDIATE AREA SHALL BE STOPPED UNTIL THE DIVISION IS ABLE TO ASSESS THE IMPACT AND MAKE FURTHER RECOMMENDATIONS FOR MITIGATIVE ACTIVITY.
- ALL GRADING AND CONSTRUCTION WORK SHALL IMPLEMENT MEASURES TO ENSURE THAT THE DISCHARGE OF POLLUTANTS FROM THE CONSTRUCTION SITE WILL BE REDUCED TO THE MAXIMUM EXTENT PRACTICABLE AND WILL NOT CAUSE OR CONTRIBUTE TO AN EXCEEDANCE OF WATER QUALITY STANDARDS.

**PUBLIC HEALTH, SAFETY AND ENVIRONMENTAL NOTES:**

- THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH, SAFETY AND ENVIRONMENTAL QUALITY.
- THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF THE PUBLIC.
- THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH. THE CONTRACTING OFFICER SHALL REQUIRE SUPPLEMENTARY MEASURES AS REQUIRED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER QUALITY AND WATER POLLUTION CONTROL STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS" AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL", AS WELL AS CHAPTER 14 OF THE REVISED ORDINANCES OF HONOLULU 1990, AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.
- THE CONTRACTOR'S ATTENTION IS DIRECTED TO CHAPTER 46 PUBLIC HEALTH REGULATIONS DEPARTMENT OF HEALTH, STATE OF HAWAII, "COMMUNITY NOISE CONTROL" IN WHICH MAXIMUM ALLOWABLE NOISE LEVELS HAVE BEEN SET. IF THE CONSTRUCTION ACTIVITIES FOR THIS PROJECT WILL EXCEED THE ALLOWABLE NOISE LEVELS, THE CONTRACTOR WILL BE REQUIRED TO OBTAIN A PERMIT FROM THE DIRECTOR OF THE DEPARTMENT OF PUBLIC HEALTH. THE CONTRACTOR SHALL OBTAIN A COPY OF CHAPTER 46 AND BECOME FAMILIAR WITH THE NOISE LEVEL RESTRICTIONS AND THE PROCEDURES FOR OBTAINING A PERMIT FOR CONSTRUCTION ACTIVITIES. APPLICATION AND INFORMATION ON VARIANCES ARE AVAILABLE AT THE ENVIRONMENTAL HEALTH SERVICES DIVISION, 591 ALA MOANA BLVD., HONOLULU, HI 96813 OR BY TELEPHONE (586-4700).

**GRADING NOTES:**

- ALL GRADING WORK SHALL BE DONE IN ACCORDANCE WITH CHAPTER 14, ARTICLES 13, 14, 15 AND 16, AS RELATED TO GRADING AND STOCKPILING, SOIL EROSION AND SEDIMENT CONTROL OF THE REVISED ORDINANCES OF HONOLULU, 1990, AS AMENDED.
- NO CONTRACTOR SHALL PERFORM ANY GRADING OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.
- THE CONTRACTOR, AT HIS/HER OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60.1, "AIR POLLUTION CONTROL".
- THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS/HER SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
- ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATERS FROM DAMAGING THE CUT FACE OF AN EXCAVATION OR THE SLOPED SURFACES OF A FILL. FURTHERMORE, ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE SITE.
- ALL SLOPES AND EXPOSED AREAS SHALL BE SODDED OR PLANTED AS SOON AS FINAL GRADES HAVE BEEN ESTABLISHED. PLANTING SHALL NOT BE DELAYED UNTIL ALL GRADING WORK HAS BEEN COMPLETED. GRADING TO FINAL GRADE SHALL BE CONTINUOUS, AND ANY AREA WITHIN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED SHALL BE PLANTED.
- FILLS ON SLOPES STEEPER THAN 5:1 SHALL BE KEYED.
- THE CITY SHALL BE INFORMED OF THE LOCATION OF THE BORROW/DISPOSAL SITE FOR THE PROJECT. THE BORROW/DISPOSAL SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
- NO GRADING OR STOCKPILING WORK SHALL BE DONE ON SATURDAYS, SUNDAYS AND HOLIDAYS AT ANY TIME WITHOUT PRIOR NOTICE TO THE DIRECTOR, DEPARTMENT OF PLANNING AND PERMITTING, PROVIDED SUCH GRADING WORK IS ALSO IN CONFORMANCE WITH THE COMMUNITY NOISE CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 46, "COMMUNITY NOISE CONTROL".
- THE LIMITS OF THE AREA TO BE GRADED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE GRADING WORK.

**GRADING NOTES (CONTINUED):**

- ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER QUALITY AND WATER POLLUTION CONTROL STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS" AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL" AND IF APPLICABLE, THE NPDES PERMIT FOR THE PROJECT.
- WHERE APPLICABLE AND FEASIBLE THE MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTH MOVING PHASE OF THE GRADING IS INITIATED.
- TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.
- IF THE GRADING AND STOCKPILING WORK INVOLVES CONTAMINATED SOIL, THEN ALL GRADING AND STOCKPILING WORK SHALL BE DONE IN CONFORMANCE WITH APPLICABLE STATE AND FEDERAL REQUIREMENTS.
- THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEERING BRANCH, DEPARTMENT OF PLANNING AND PERMITTING AT 768-8084 TO ARRANGE FOR INSPECTIONAL SERVICES AND SUBMIT TWO (2) SETS OF APPROVED CONSTRUCTION PLANS SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK.
- PURSUANT TO CHAPTER 6E, HRS, IN THE EVENT ANY ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE CONTRACTING OFFICER, THE HONOLULU POLICE DEPARTMENT, THE STATE DEPARTMENT OF LAND AND NATURAL RESOURCES-HISTORIC PRESERVATION DIVISION (692-8015). IN ADDITION, FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL INFORM THE CIVIL ENGINEERING BRANCH, DEPARTMENT OF PLANNING AND PERMITTING (768-8084)
- NON-COMPLIANCE TO ANY OF THE ABOVE REQUIREMENTS SHALL MEAN IMMEDIATE SUSPENSION OF ALL WORK, AND REMEDIAL WORK SHALL COMMENCE IMMEDIATELY. ALL COSTS INCURRED SHALL BE BILLED TO THE VIOLATOR. FURTHERMORE, VIOLATORS SHALL BE SUBJECT TO ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES.
- FOR BENCH MARK, SEE SHEET C-2.

**WATER NOTES:**

- UNLESS OTHERWISE SPECIFIED, ALL MATERIALS AND CONSTRUCTION OF WATER SYSTEM FACILITIES AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE "WATER SYSTEM STANDARDS" STATE OF HAWAII, DATED 2002, AND ALL SUBSEQUENT AMENDMENTS AND ADDITIONS.
- TEST PRESSURE SHALL BE ONE OF THE FOLLOWING:
  - PREVAILING LINE PRESSURE, JOINTS LEFT EXPOSED FOR 24 HOURS TO CHECK FOR LEAKS PRIOR TO BACKFILL.
  - 150 PSI.
- THE CONTRACTOR SHALL CHLORINATE THE ENTIRE INSIDE SURFACE OF EACH PIPE AND FITTING WITH DISINFECTANT SOLUTION OF 5 OUNCES OF SODIUM HYPOCHLORITE MIXED WITH 10 GALLONS OF WATER.
- THE CONTRACTOR SHALL PAY THE APPLICABLE WATER SYSTEM FACILITIES AND/OR ONE-TIME SERVICE CHARGE.
- THE CONTRACTOR SHALL NOTIFY BWS PLANNING AND ENGINEERING DIVISION, CONSTRUCTION SECTION ONE WEEK PRIOR TO COMMENCING WORK ON THE WATER SYSTEM.
- CONTRACTOR SHALL CUT AND PLUG ALL EXISTING UNUSED LATERALS AT THE MAIN WHETHER OR NOT SHOWN ON THE PLANS. THE DAMAGED AREA SHALL BE REPAIRED TO AN EQUAL OR BETTER CONDITION THAN THE IMMEDIATE AREA. ALL WORK SHALL BE DONE AT THE EXPENSE OF THE CONTRACTOR.
- ALL PLANS APPROVED BY THE BOARD OF WATER SUPPLY ARE BASED SOLELY ON THE ADEQUACY OF THE WATER SUPPLY.
- BOARD OF WATER SUPPLY APPROVAL OF THESE PLANS DOES NOT CONSTITUTE A WATER COMMITMENT. AVAILABILITY OF WATER WILL BE DETERMINED WHEN BUILDING PERMIT IS PRESENTED TO THE DEPARTMENT. WATER COMMITMENT WILL DEPEND UPON THE STATUS OF THE WATER SYSTEM AT THAT TIME. SHOULD WATER SERVICE BE MADE AVAILABLE, THE WATER COMMITMENT WILL BE EFFECTIVE WHEN THE PROJECT RECEIVES AN APPROVED BUILDING PERMIT FROM THE BUILDING DEPARTMENT. ALL WATER COMMITMENTS WILL BE CANCELED IN THE EVENT THE BUILDING PERMIT IS CANCELED.

BWS FLOW REQUIREMENTS			
PREMISE ID (P/ID):	1064865		
METER NUMBER (M/N):	01700554		
A. PROPOSED DOMESTIC (ALL FIXTURES BEING INSTALLED)	1 F.U.	GPM	GPD
B. PROPOSED IRRIGATION	0 F.U.	0 GPM	0 GPD
C. TOTAL PROPOSED (ADD A AND B ABOVE)	1 F.U.	GPM	GPD
D. DEMOLITION (ALL FIXTURES BEING REMOVED)	0 F.U.	0 GPM	
E. NET TOTAL	1 F.U.	GPM	GPD
F. EXISTING TO REMAIN	0 F.U.	0 GPM	0 GPD
G. NEW GRAND TOTAL	1 F.U.	GPM	GPD

**FOR ESTIMATING PURPOSES ONLY**

DESCRIPTION OF WORK	ESTIMATE
DOMESTIC SERVICE	
METER INSTALLATION CHARGE	
WATER SYSTEM FACILITIES CHARGES F.U. x \$ /F.U. =	
*CREDIT S/N	
S/N	
FIRE SERVICE	
METER INSTALLATION CHARGE ONE-TIME CHARGE	
TOTAL	

\* CREDITS (IF ANY) WILL BE DETERMINED WHEN THE BUILDING PERMIT APPLICATION IS SUBMITTED FOR BWS REVIEW AND APPROVAL.

THIS ESTIMATE IS SUBJECT TO CHANGE AND A FORMAL WRITTEN QUOTATION SHALL BE OBTAINED WITHIN 30 DAYS AFTER THE CONSTRUCTION PLAN IS APPROVED BY BWS. ALL PAYMENTS FOR THE CHARGES SHOWN ON THE FORMAL QUOTATION SHALL BE MADE WITHIN 30 DAYS OF THE BWS APPROVAL DATE. IF PAYMENTS ARE NOT RECEIVED WITHIN THE 30 DAY PERIOD, THE PROJECT WILL BE SUBJECT TO THE PREVAILING RATES.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 Signature: *Paul A. Johnson* 7/11/14  
 SIGNATURE DATE

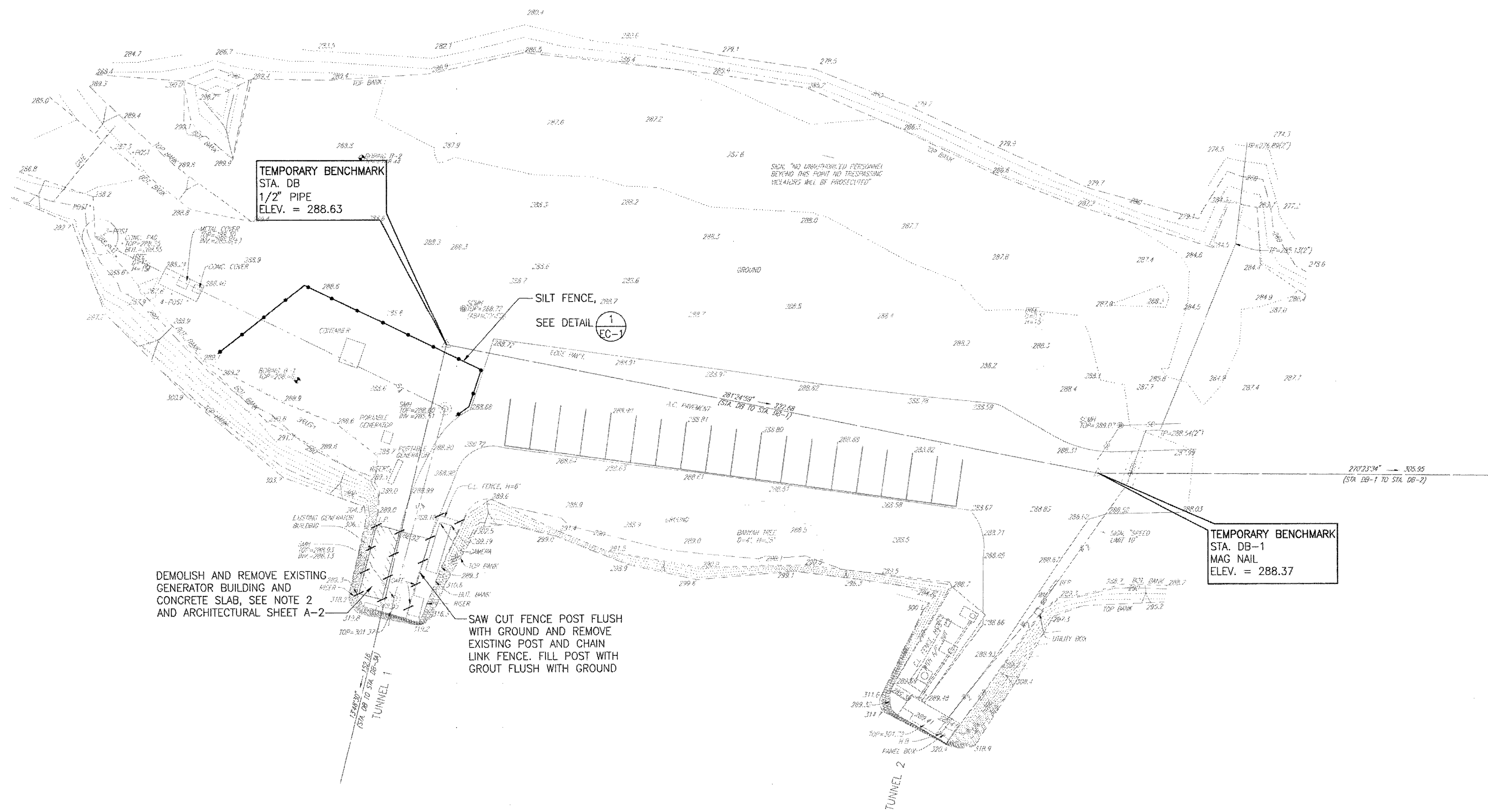
REVISION NO	DESCRIPTION	DATE	BY	CHK'D

	DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
	DESIGNED: DA DRAWN: GY SAFETY: SECURITY:	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE  CIVIL NOTES AND BWS FACILITIES TABLE
	APPROVED: [Signature] DATE: 4-31-11 APRIL 30, 2012 EXPIRATION DATE OF THE LICENSE	DATE: JAN. 31, 2011 SCALE: SHEET: C-1 5 OF 57

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY  
 The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

0911 \ C-1.dwg  
 06/02/2010 09:08:07  
 0911 \ C-1.dwg  
 06/02/2010 09:08:07

TRUE NORTH



TEMPORARY BENCHMARK  
STA. DB  
1/2" PIPE  
ELEV. = 288.63

SILT FENCE, SEE DETAIL EC-1

DEMOLISH AND REMOVE EXISTING GENERATOR BUILDING AND CONCRETE SLAB, SEE NOTE 2 AND ARCHITECTURAL SHEET A-2

SAW CUT FENCE POST FLUSH WITH GROUND AND REMOVE EXISTING POST AND CHAIN LINK FENCE. FILL POST WITH GROUT FLUSH WITH GROUND

TEMPORARY BENCHMARK  
STA. DB-1  
MAG NAIL  
ELEV. = 288.37

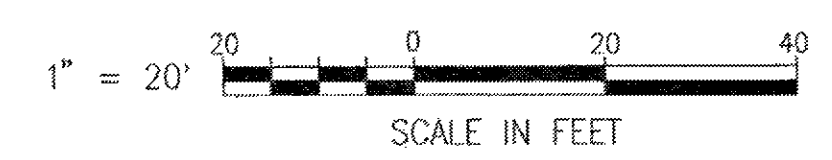
NOTES:

- FOR MAKAI SIDE OF TUNNEL ENTRANCE, SEE SHEET C-4.
- DEMOLITION OF EXISTING GENERATOR BUILDING SHALL INCLUDE REMOVAL AND DISPOSAL OF ALL EQUIPMENT, CONCRETE SLAB, CMU WALLS AND ROOF OF THE BUILDING.
- THE EXISTING 60KW GENERATOR IN THE EXISTING GENERATOR BUILDING SHALL REMAIN IN OPERATION AND CONNECTED TO THE EXISTING ELECTRICAL SYSTEM UNTIL THE NEW GENERATOR AND THE NEW ELECTRICAL SYSTEM IS IN OPERATION.

EXISTING SITE/DEMOLITION/EROSION CONTROL PLAN

SCALE : 1" = 20'

GRAPHIC SCALE



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
Signature: *Paul A. De...* 7/18/14  
SIGNATURE DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

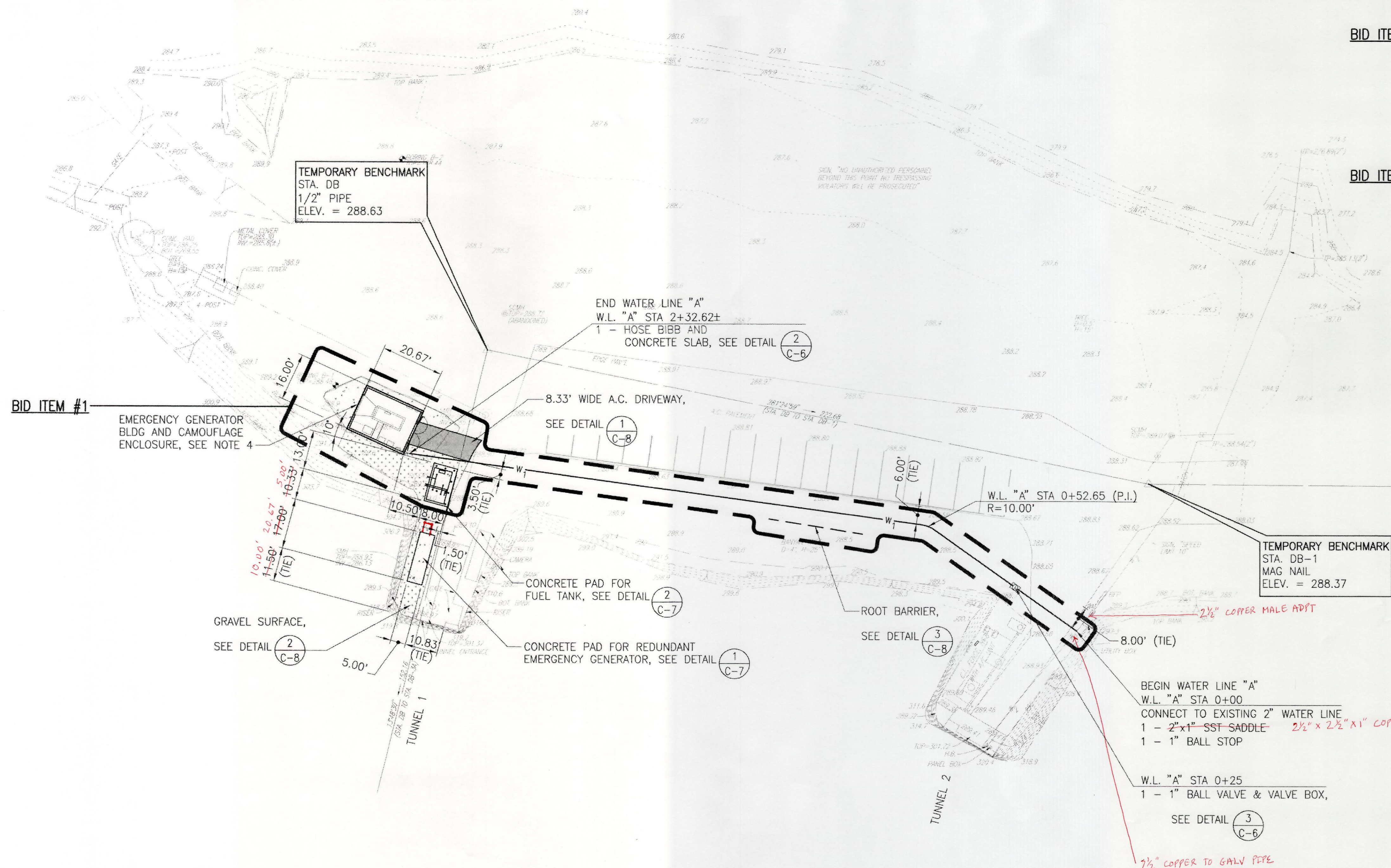
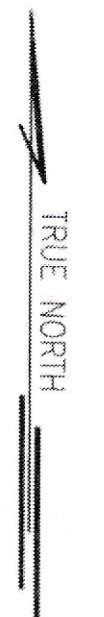
RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: DA  
DRAWN: GY  
SAFETY:  
COURTY:  
APPROVED:  
DATE: 1/31/11  
APRIL 30, 2012  
EXPIRATION DATE OF THE LICENSE

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE  
EXISTING SITE/DEMOLITION/EROSION CONTROL PLAN  
DATE: JAN. 31, 2011  
SCALE:  
DWG # C-2  
SHEET 6 of 57

09111\_C-2.dwg  
 06/02/2010  
 OFFER: GY  
 REVISION: 06/02/2010



- NOTES:**
1. FOR TYPICAL WATER TRENCH, SEE DETAIL <sup>1</sup>/<sub>C-6</sub>
  2. FOR TYPICAL SURFACE RESTORATION, SEE DETAIL <sup>2</sup>/<sub>C-8</sub>
  3. FOR BACKUP GENERATOR BUILDING AND CAMOUFLAGE ENCLOSURE, SEE ARCHITECTURAL SHEET A-7.
  4. FOR MAKAI SIDE OF TUNNEL ENTRANCE, SEE SHEET C-4
  5. FOR WORK OUTSIDE TUNNEL 2 ENTRANCE, SEE MECHANICAL SHEET M-2.
  6. FOR ELECTRICAL DUCT WORK OUTSIDE TUNNEL 1 ENTRANCE, SEE ELECTRICAL SHEET E-8. RESTORE CONCRETE PAVEMENT AND AC PAVEMENT AS REQUIRED.
  7. THE EXISTING 60KW GENERATOR IN THE EXISTING GENERATOR BUILDING SHALL REMAIN IN OPERATION AND CONNECTED TO THE EXISTING ELECTRICAL SYSTEM UNTIL THE NEW GENERATOR AND THE NEW ELECTRICAL SYSTEM IS IN OPERATION.

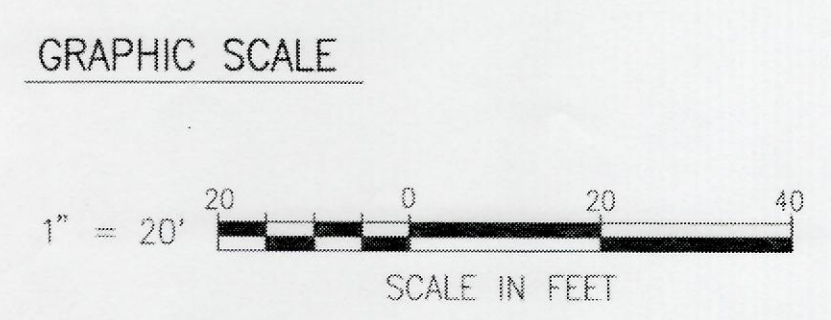
BID ITEM #1

BID ITEM #1

BID ITEM #1

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul A. Paul* 7/11/14  
 SIGNATURE DATE

**SITE/UTILITY PLAN**  
 SCALE : 1" = 20'



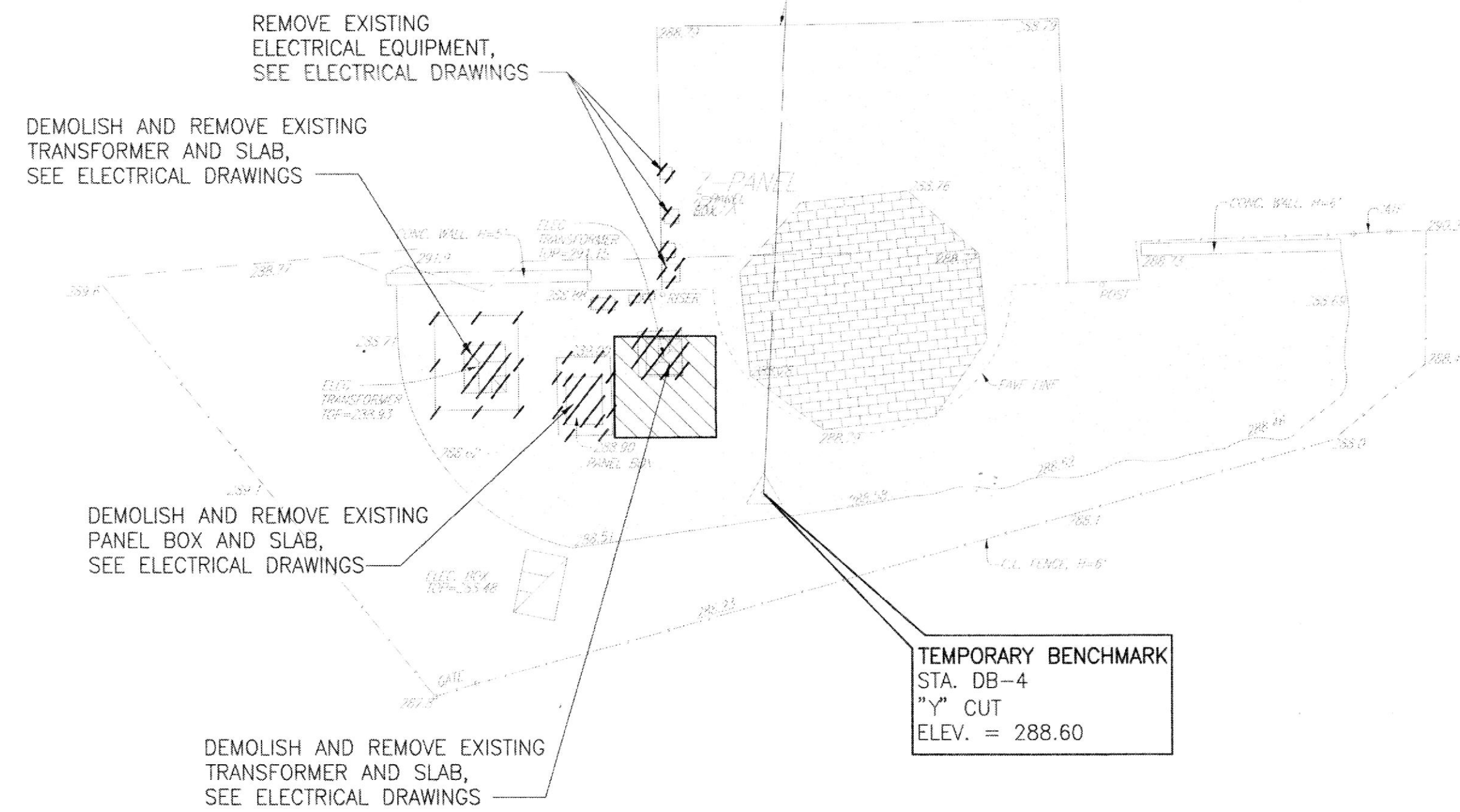
IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT—SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

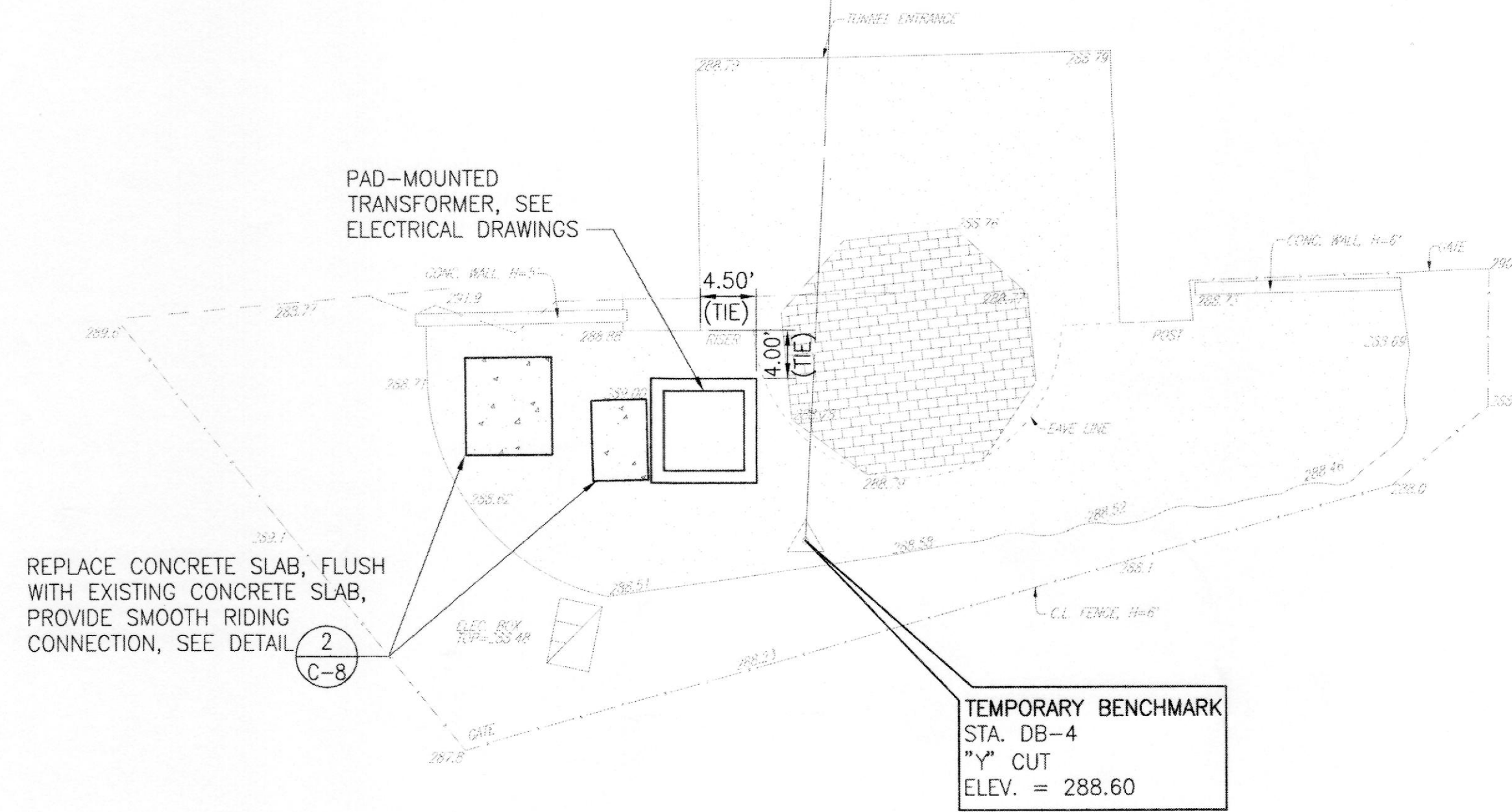
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<p>RICHARD MATSUNAGA &amp; ASSOCIATES ARCHITECTS INC.</p>	DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
	DESIGNED: DA DRAWN: GY SAFETY: SECURITY:	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE SITE/UTILITY PLAN
	APPROVED: [Signature] DATE: APRIL 30, 2012 EXPIRATION DATE OF THE LICENSE:	APPROVED: [Signature] DATE: JAN. 31, 2011 SCALE: SHEET 7 of 57

TRUE NORTH



EXISTING SITE/DEMOLITION PLAN



SITE PLAN

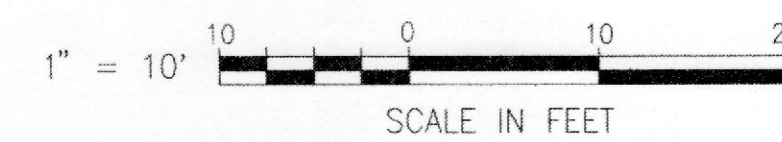
NOTE:

1. FOR ELECTRICAL CONDUITS TO TRANSFORMER, SEE ELECTRICAL DRAWINGS.

MAKAI SIDE OF TUNNEL ENTRANCE

SCALE : 1" = 10'

GRAPHIC SCALE



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul A. Jell* DATE: *1/31/11*

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: DA  
DRAWN: GY  
SAFETY:  
SECURITY:

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

MAKAI SIDE TUNNEL ENTRANCE

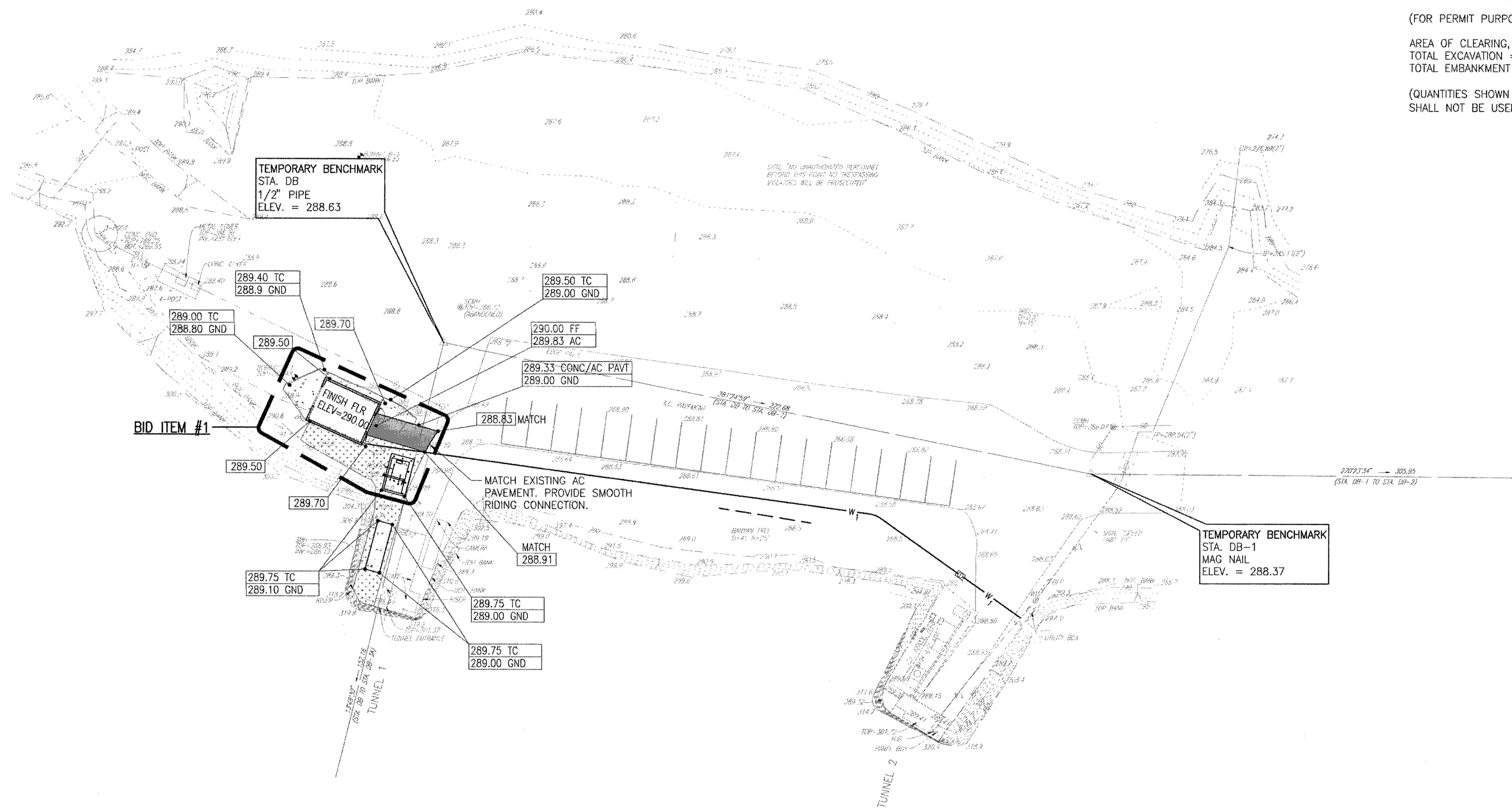
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DATE: 1/31/11  
EXPIRATION DATE OF THE LICENSE: APRIL 30, 2012

APPROVED: [Signature]	APPROVED: [Signature]	DATE: JAN. 31, 2011
154 GP / BICE	154 GP / CC	SCALE:
APPROVED: [Signature]	APPROVED: [Signature]	OWC # C-4
HANG / CC	HANG / CC	SHEET 8 of 57
APPROVED: [Signature]	APPROVED: [Signature]	
TAG - HAWAII	154 CCS / CEC PROJ ENGR	

CREATED: 06/02/2010  
 REVISED: 06/02/2010  
 PLOT SCALE: 1"=10'  
 Job No./File Name: 10111\_C-4.dwg



TRUE NORTH



**EARTHWORK SUMMARY**

(FOR PERMIT PURPOSES ONLY)  
 AREA OF CLEARING, GRUBBING, AND GRADING = 0.07 ACRES  
 TOTAL EXCAVATION = 2 CUBIC YARDS  
 TOTAL EMBANKMENT = 23 CUBIC YARDS  
 (QUANTITIES SHOWN ARE FOR PERMIT PURPOSES ONLY AND SHALL NOT BE USED FOR BUILDING)

BID ITEM #1

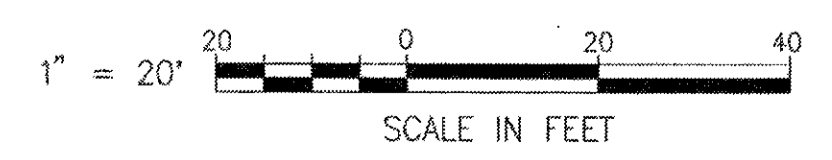
TEMPORARY BENCHMARK  
 STA. DB  
 1/2" PIPE  
 ELEV. = 288.63

TEMPORARY BENCHMARK  
 STA. DB-1  
 MAG NAIL  
 ELEV. = 288.37

**GRADING PLAN**

SCALE : 1" = 20'

**GRAPHIC SCALE**



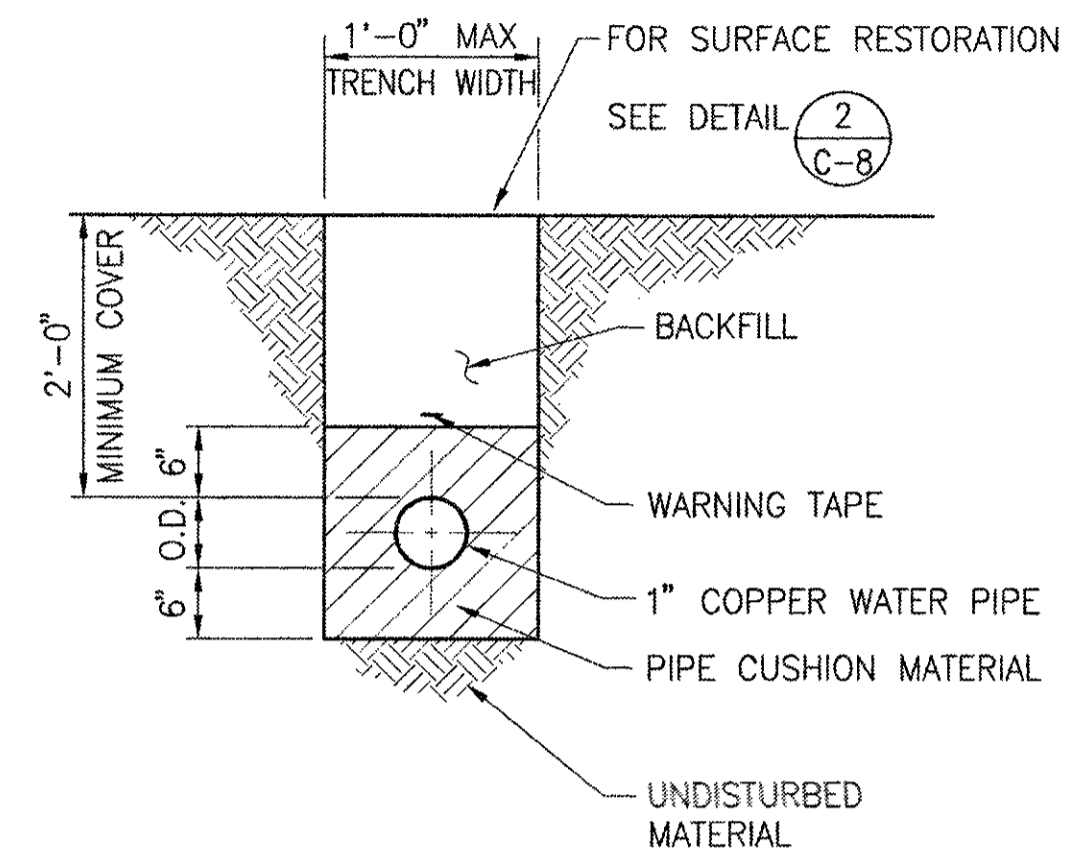
IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY  
 The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul J. Paul* 7/11/11  
 SIGNATURE DATE

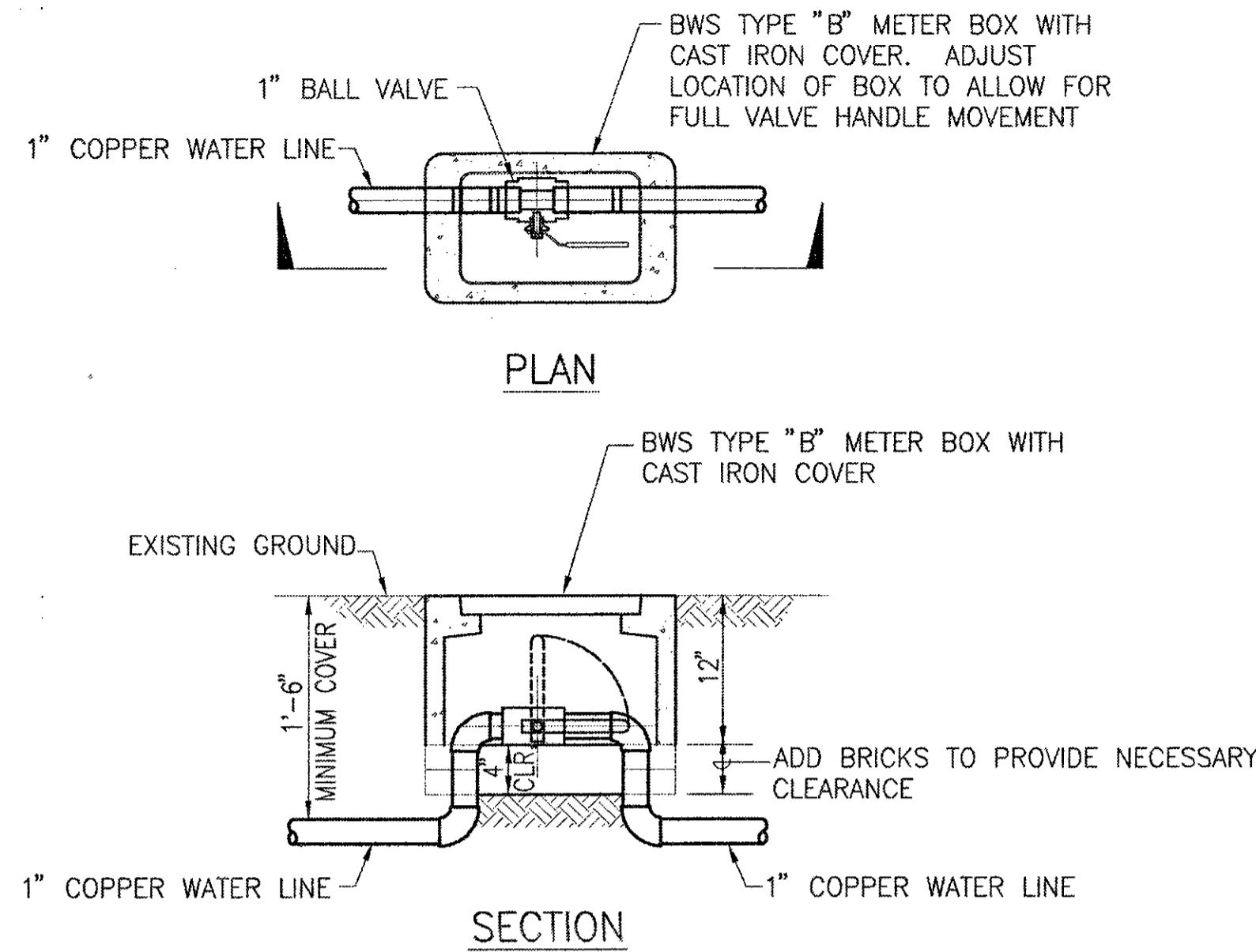
REVISION NO	DESCRIPTION	DATE	BY	CHK'D

	DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII		
	DESIGNED: DA DRAWN: GY SAFETY: SECURITY:	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE GRADING PLAN	
	THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION BY [Signature] DATE: APRIL 30, 2012 EXPIRATION DATE OF THE LICENSE:	APPROVED: [Signature] DATE:	SCALE: C-5 SHEET 9 of 57

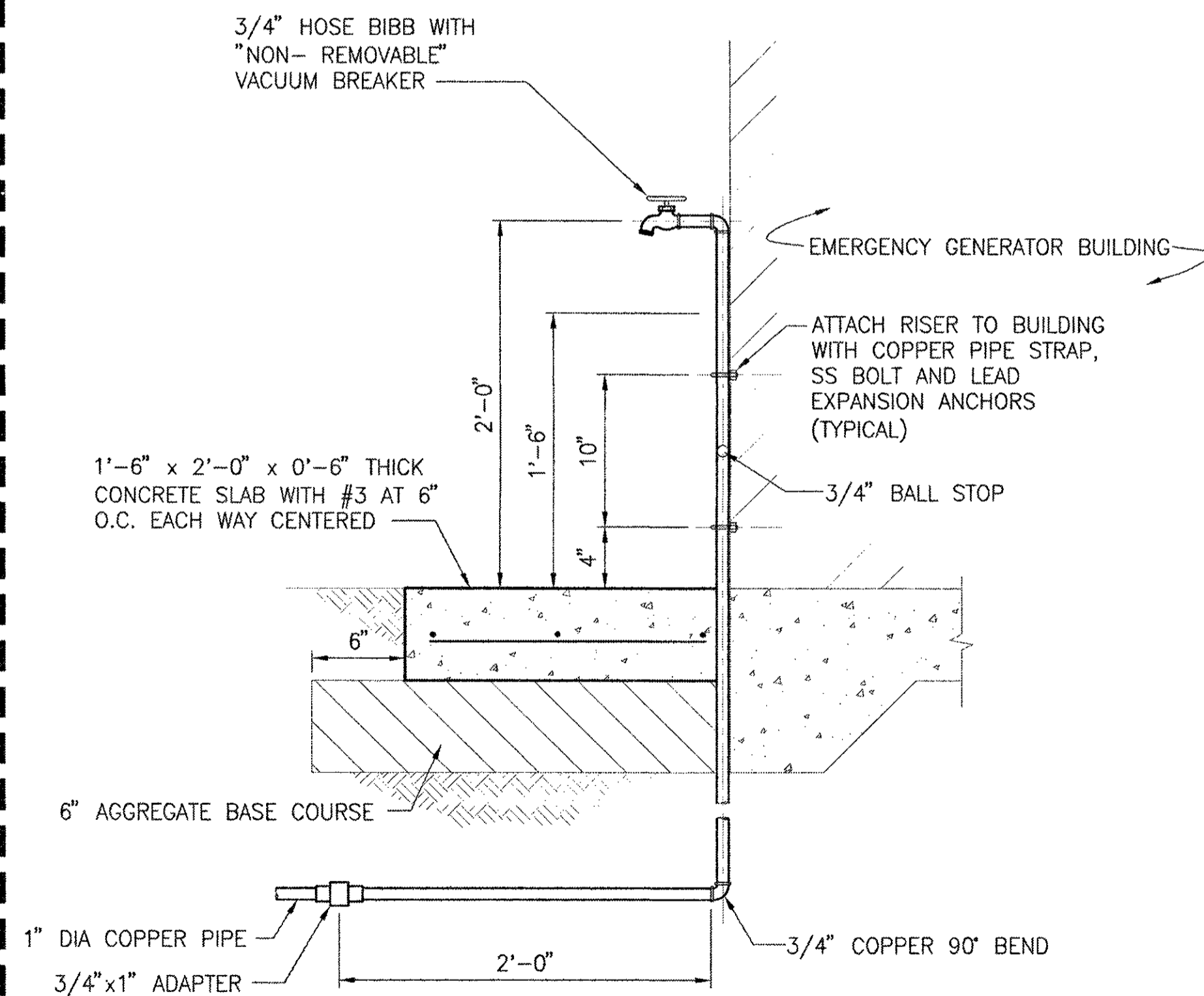
REVISIONS: 16/02/2010 OPER: GY  
 0311 C-5-849  
 1481 No. 1 file Name



**1** TYPICAL WATER TRENCH DETAIL  
C-6 SCALE: 3/4" = 1'-0"



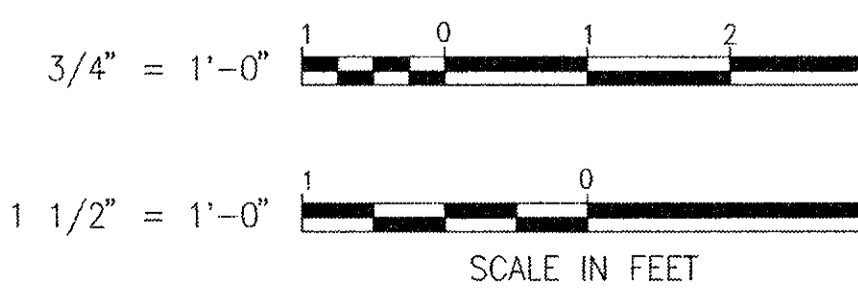
**3** BALL VALVE & VALVE BOX DETAIL  
C-6 SCALE: 3/4" = 1'-0"



**2** HOSE BIBB DETAIL  
C-6 SCALE: 1 1/2" = 1'-0"

BID ITEM #1

GRAPHIC SCALE



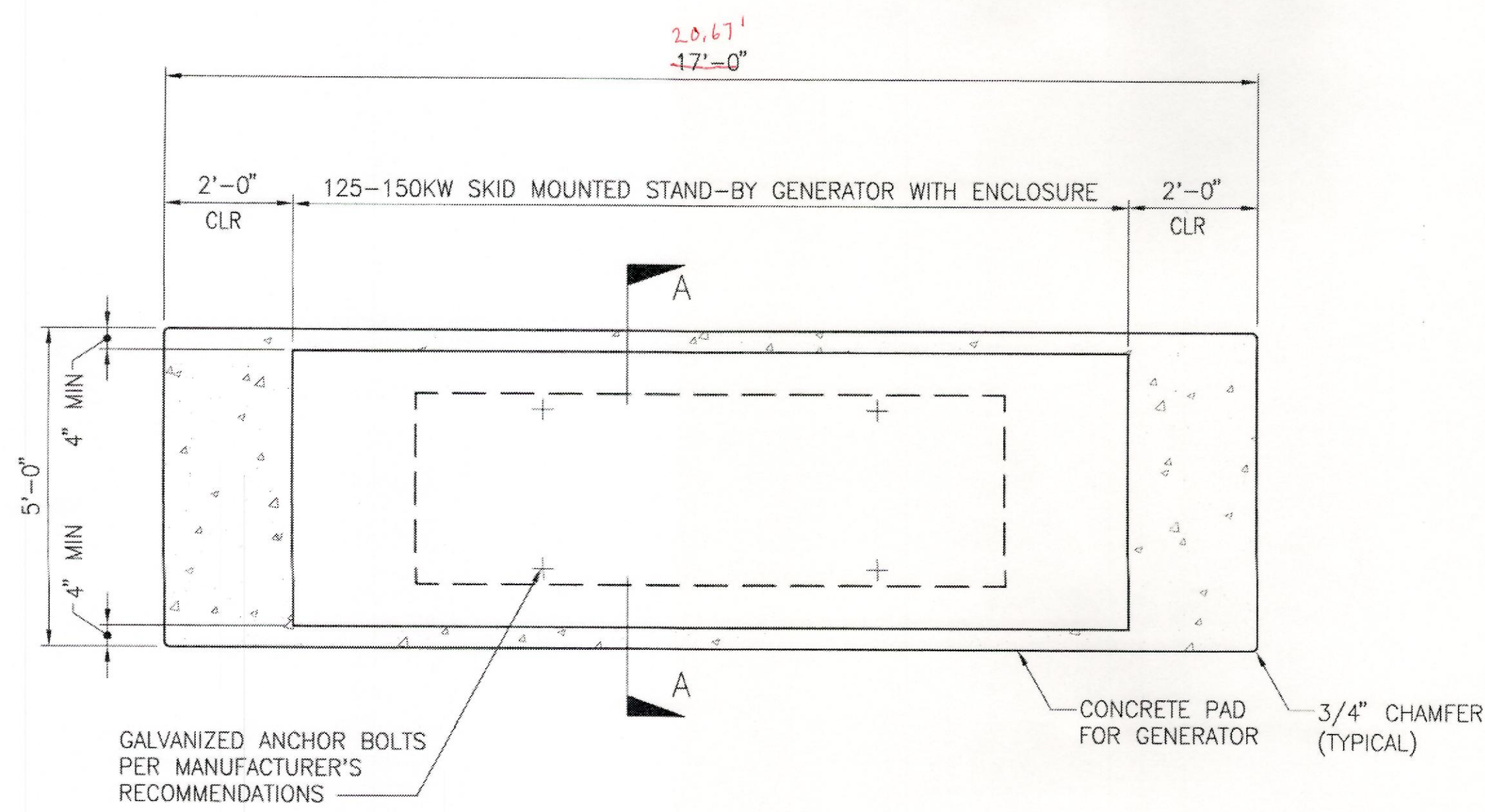
IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

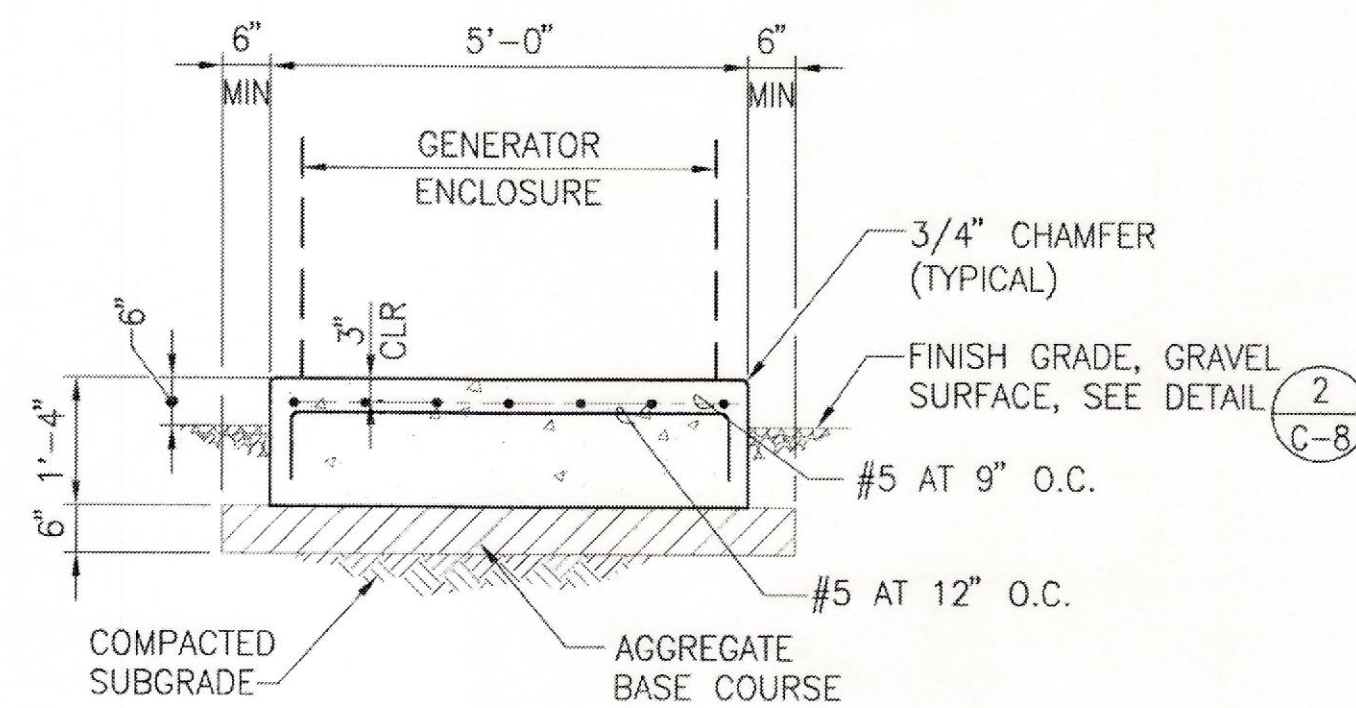
**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Richard J. Nakamura* DATE: 7/11/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

	DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII			
	DESIGNED: DA DRAWN: GY SAFETY: SECURITY:	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE WATER DETAILS		
	APPROVED: 154 GP / BCE APPROVED: 154 GP / CC HUNG / CC APPROVED:	APPROVED: 154 GP / CC HUNG / CC APPROVED:	SCALE:	SHEET # C-6 SHEET 10 of 57
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION BY: <i>Richard J. Nakamura</i> DATE: 0-31-11 APRIL 30, 2012 EXPIRATION DATE OF THE LICENSE	TAG - HAWAII 154 CES / DEC PROJ ENGR	TAG - HAWAII 154 CES / DEC PROJ ENGR	TAG - HAWAII 154 CES / DEC PROJ ENGR	TAG - HAWAII 154 CES / DEC PROJ ENGR



PLAN



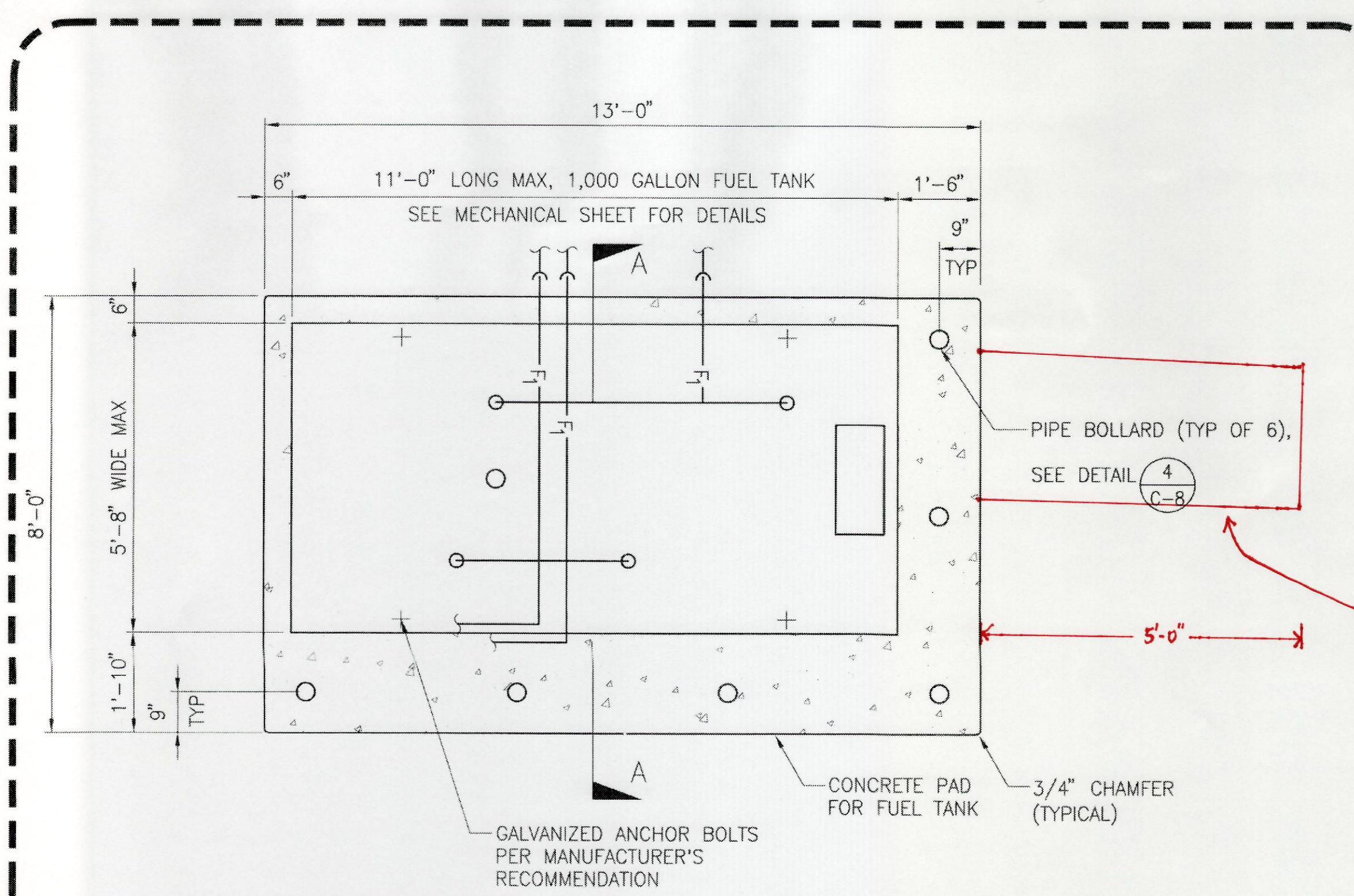
SECTION A-A

NOTE:

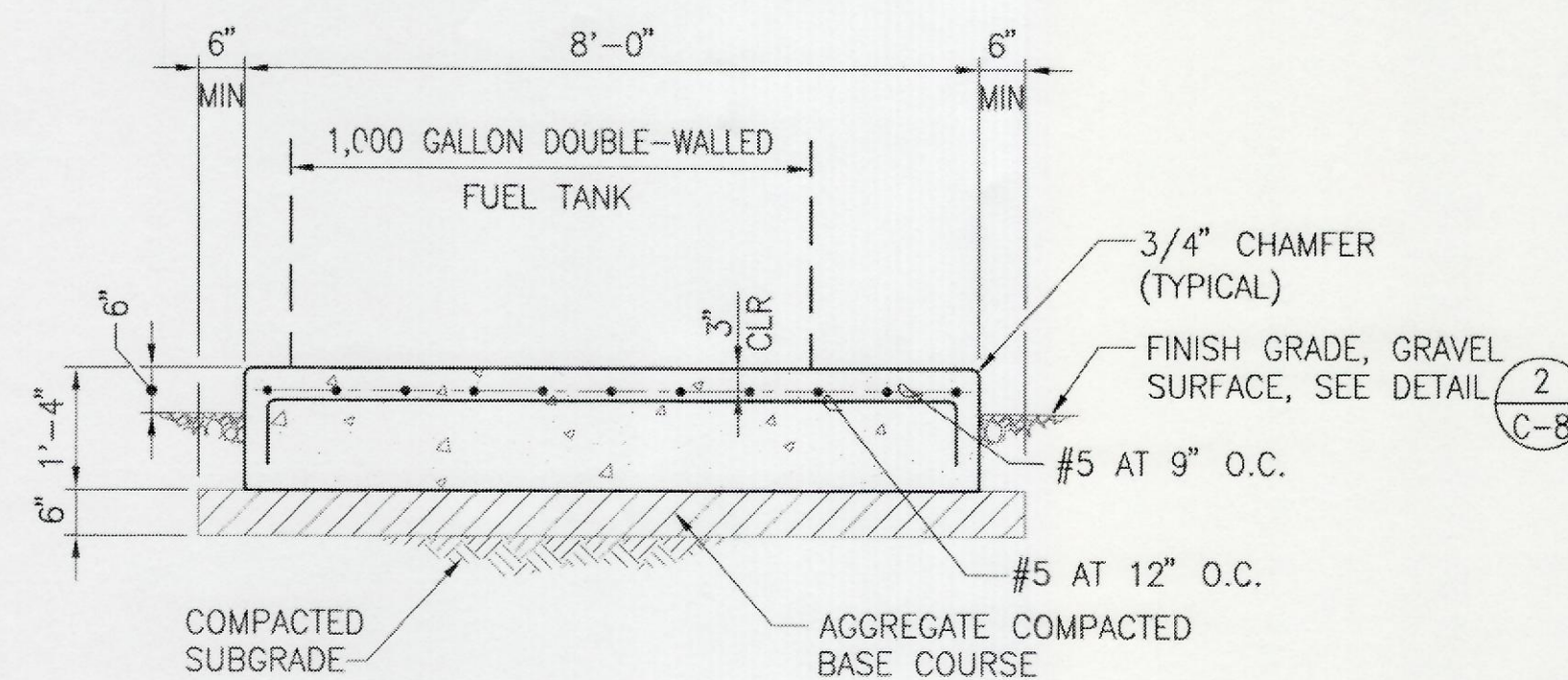
1. DIMENSIONS BASED ON CATERPILLAR GENERATOR AND ENCLOSURE MODEL D150-8. APPROVED EQUAL MAY REQUIRE ADJUSTMENT TO THE DIMENSION OF THE PAD.

1 REDUNDANT STANDBY GENERATOR PAD DETAIL

C-7 SCALE: 1/2" = 1'-0"



PLAN



SECTION A-A

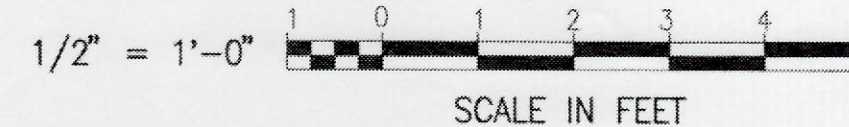
NOTE:

1. DIMENSIONS BASED ON CONVAULT 1,000 GALLON DOUBLE WALLED FUEL TANK. APPROVED EQUAL MAY REQUIRE ADJUSTMENT TO THE DIMENSION OF THE PAD.
2. FOR FUEL PIPING, SEE MECHANICAL SHEET M103.

2 FUEL TANK PAD DETAIL

C-7 SCALE: 1/2" = 1'-0"

GRAPHIC SCALE



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

PAD EXTENDED FOR PLATFORM PAD

BID ITEM #1

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul A. Paul* 7/11/11  
 SIGNATURE DATE

REVISION NO.	DESCRIPTION	DATE	BY	CHK'D

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: DA  
 DRAWN: GY  
 SAFETY: [ ]  
 SECURITY: [ ]

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

EQUIPMENT PAD DETAILS

APPROVED: [ ] DATE: JAN. 31, 2011

154 GP / BCC APPROVED: [ ] 154 GP / CC

HANG / CC: [ ] HANG / OCE

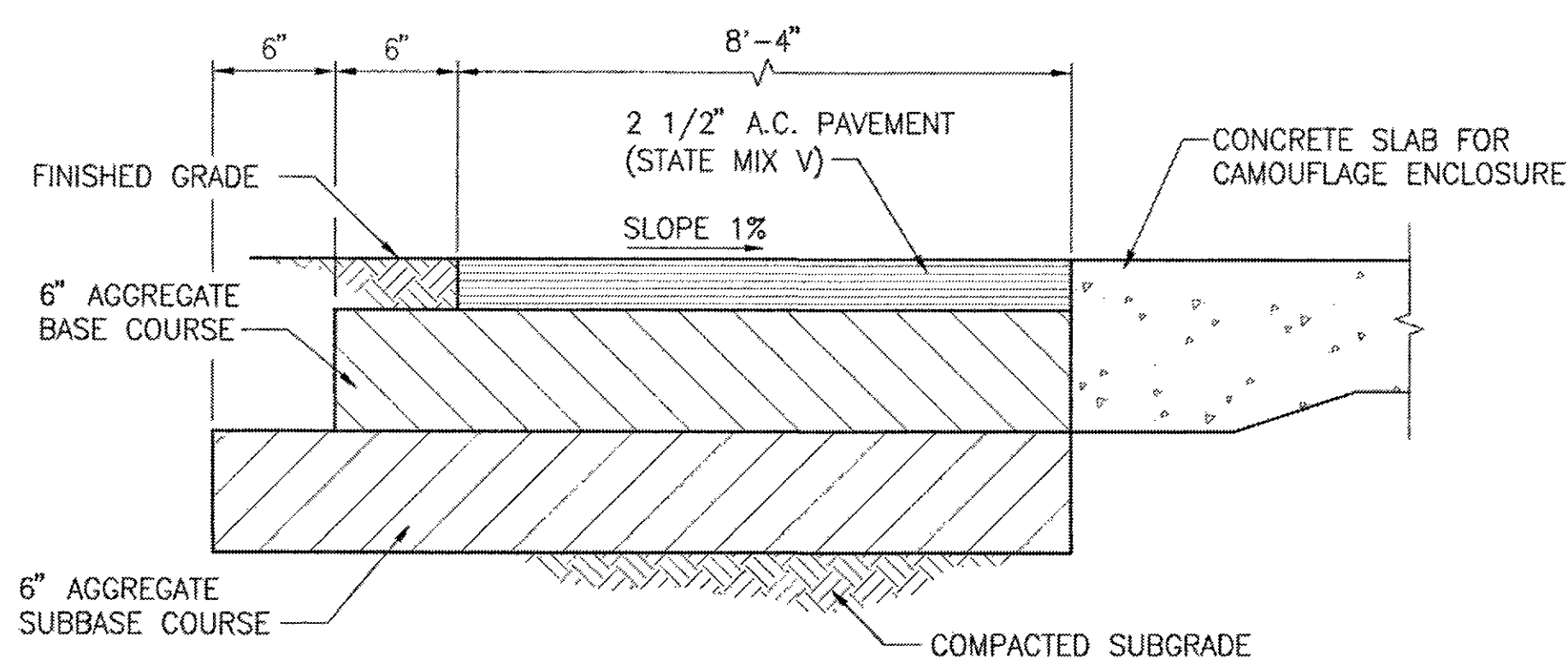
APPROVED: [ ] DATE: APRIL 30, 2012

EXPIRATION DATE OF THE LICENSE: APRIL 30, 2012

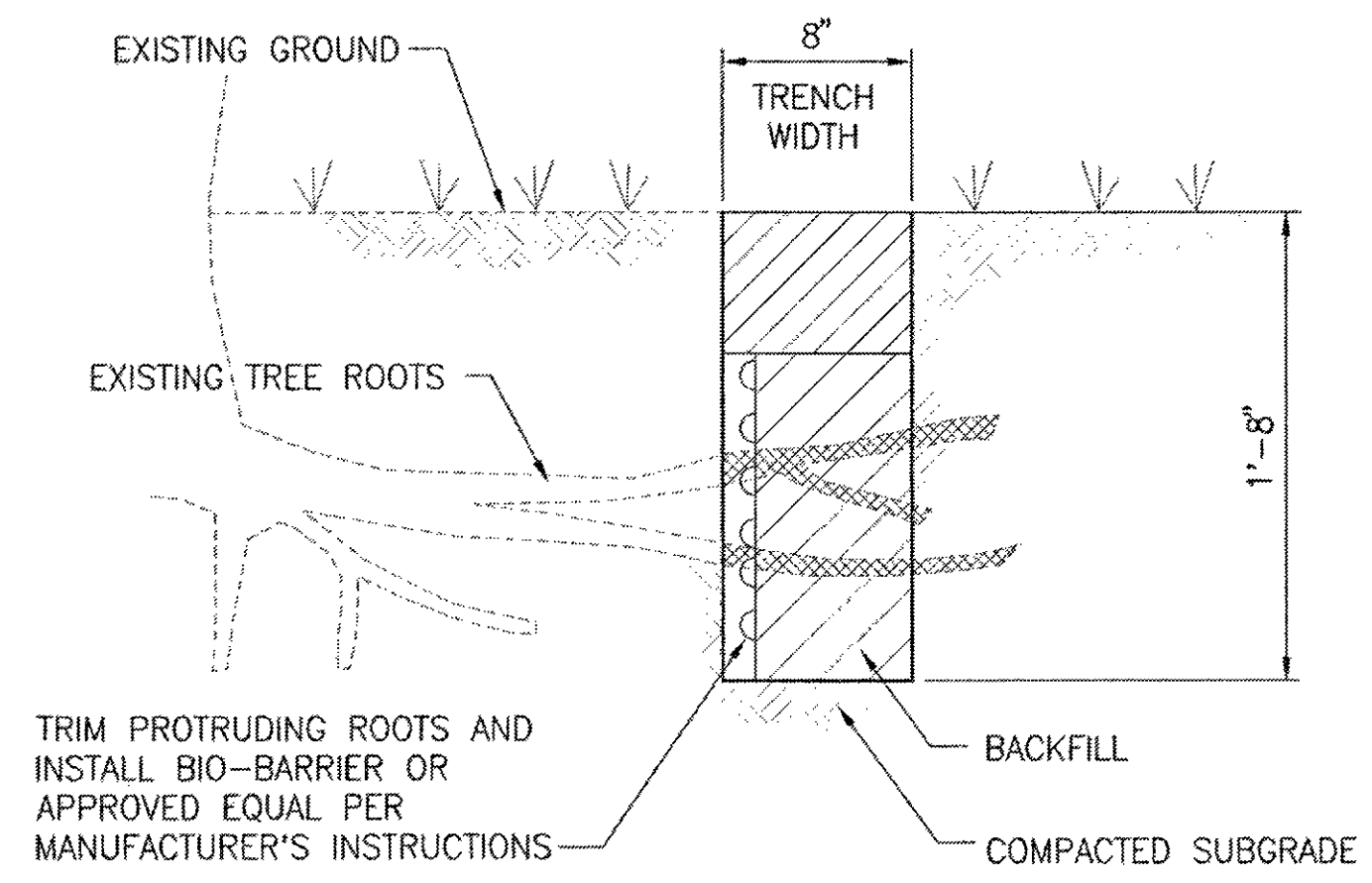
SCALE: C-7

SHEET 11 OF 57

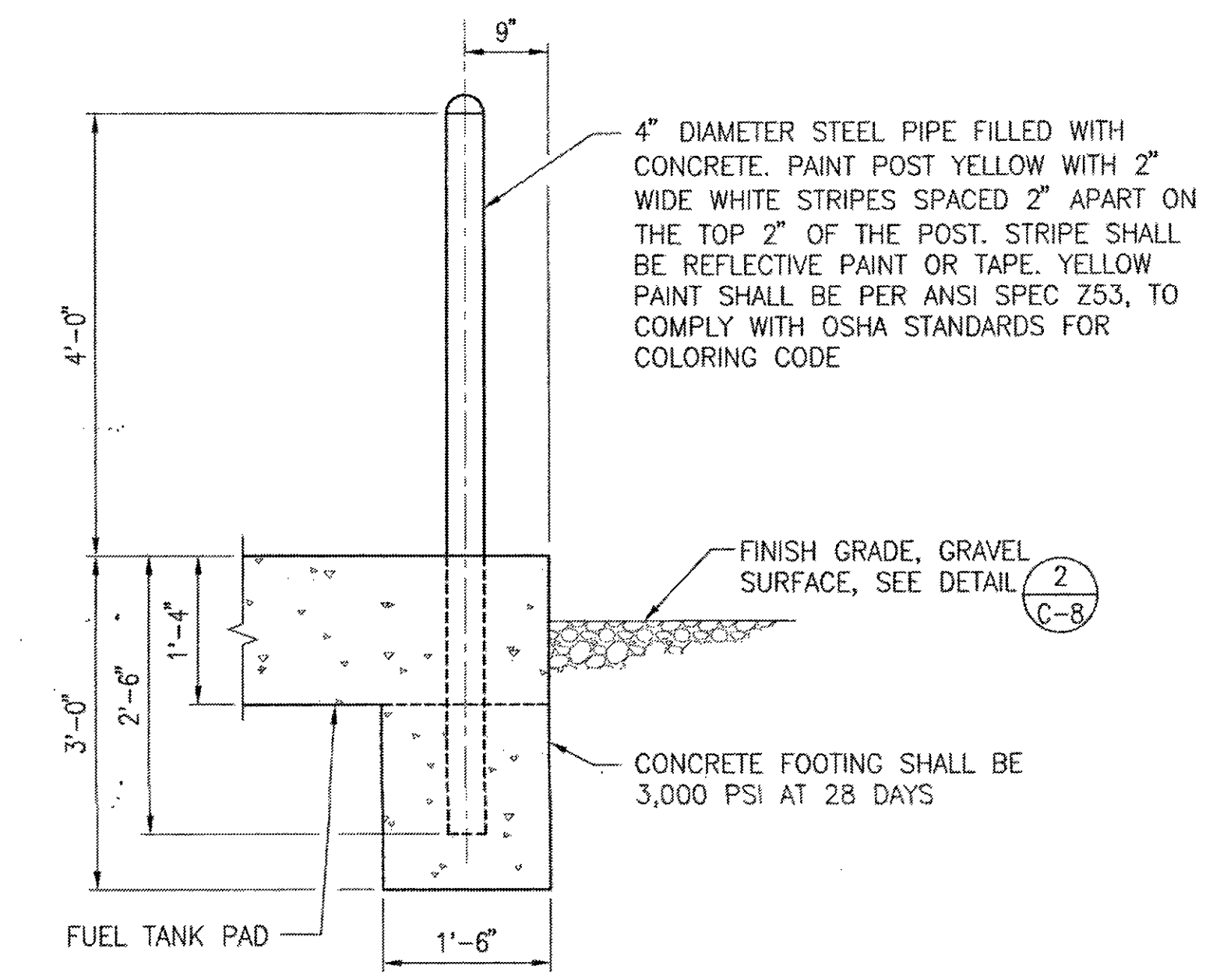
REVISION: 06/02/2010 OPER: GY  
 QH11, C-7, 49g  
 J:\08 No V.Pic Name:



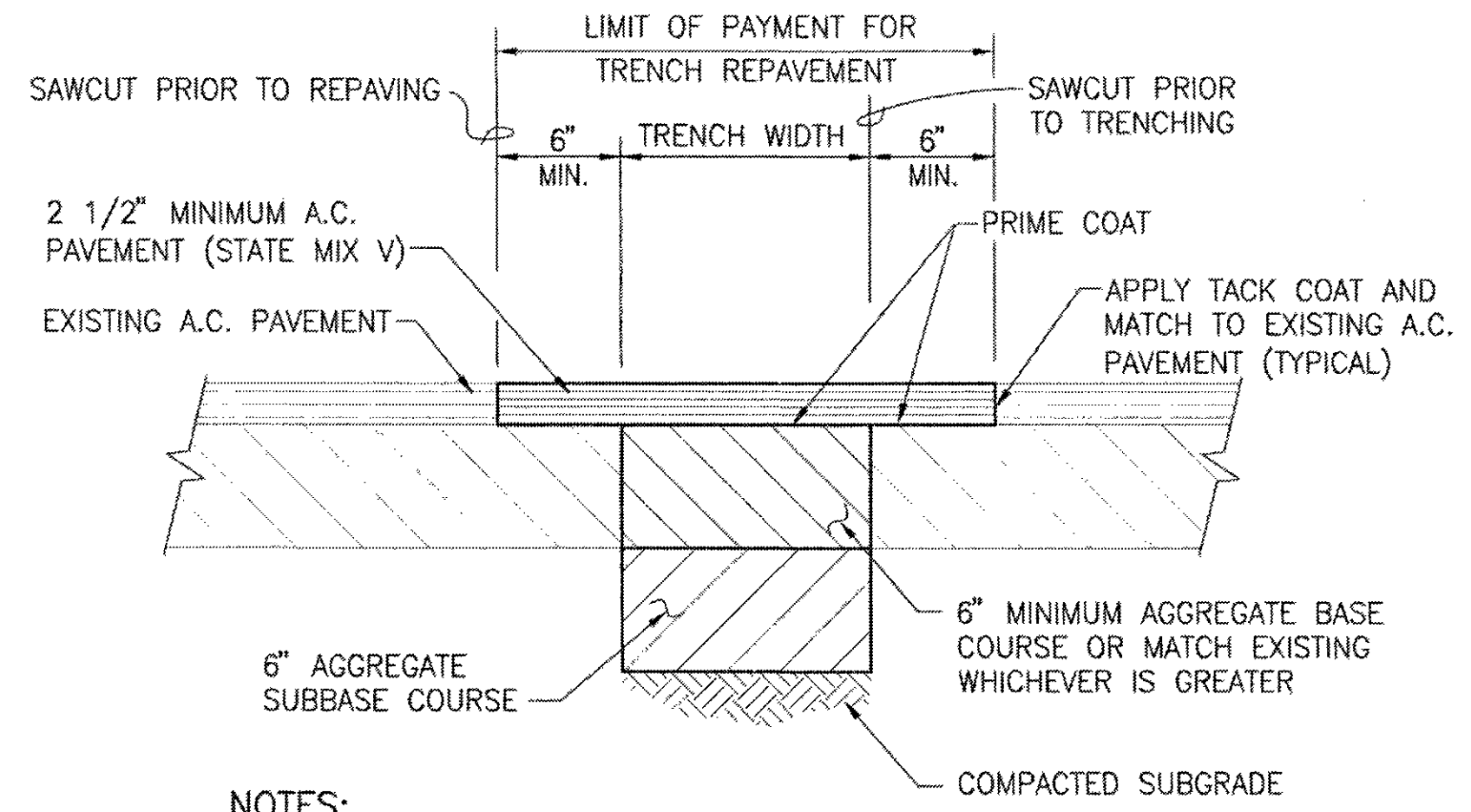
1 A.C. DRIVEWAY DETAIL  
C-8 SCALE: 1 1/2" = 1'-0"



3 ROOT BARRIER DETAIL  
C-8 SCALE: 1 1/2" = 1'-0"

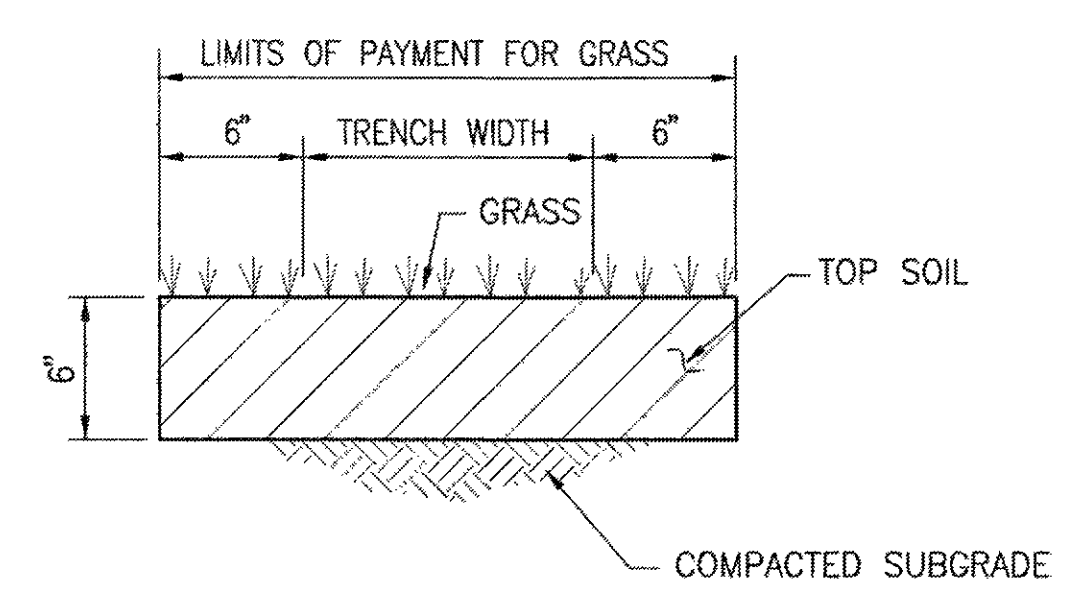


4 PIPE BOLLARD DETAIL  
C-8 SCALE: 3/4" = 1'-0"

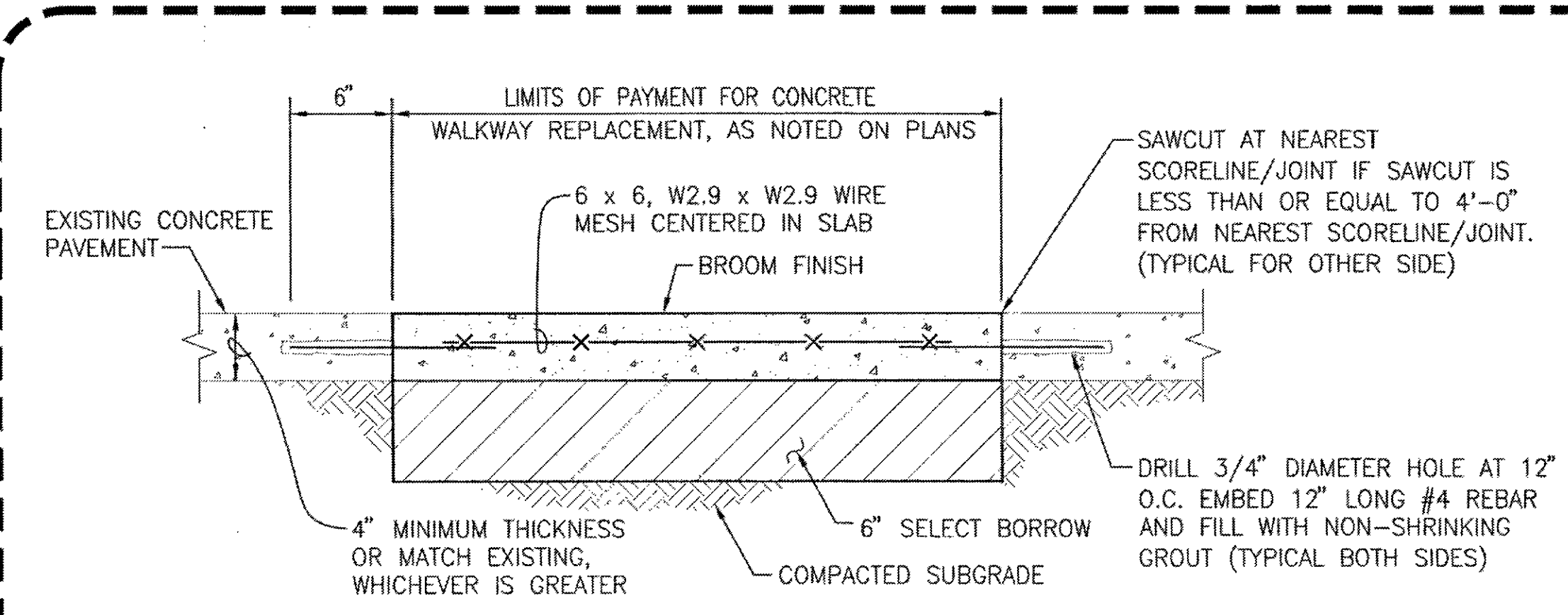


NOTES:  
1. USE PRIME COAT IF AVAILABLE. IF PRIME COAT IS UNAVAILABLE, IT IS NOT REQUIRED FOR ROAD GRADES 0% TO 7.99%.

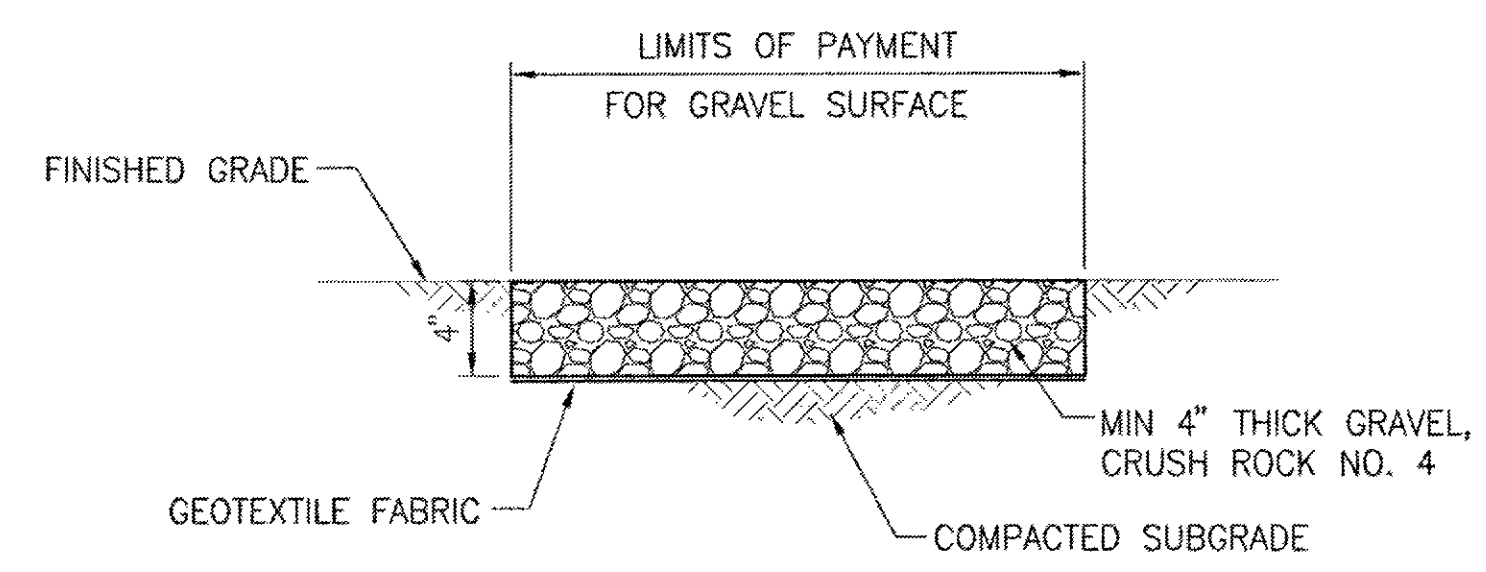
A.C. PAVEMENT



GRASS



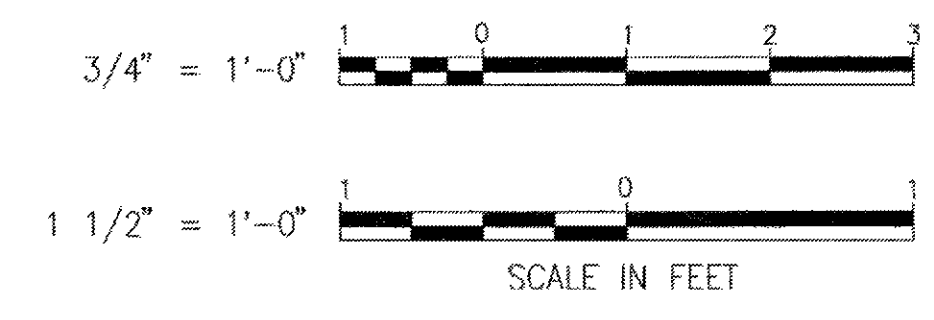
CONCRETE WALKWAYS



GRAVEL SURFACE

2 TYPICAL SURFACE RESTORATION DETAILS  
C-8 SCALE: 1 1/2" = 1'-0"

GRAPHIC SCALE



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE. REDUCED ACCORDINGLY.  
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

BID ITEM #1

AS BUILT  
PAUL'S ELECTRICAL CONTRACTING LLC  
Signature: Paul A. Paul Date: 7/11/11

REVISION NO.	DESCRIPTION	DATE	BY	CHK'D

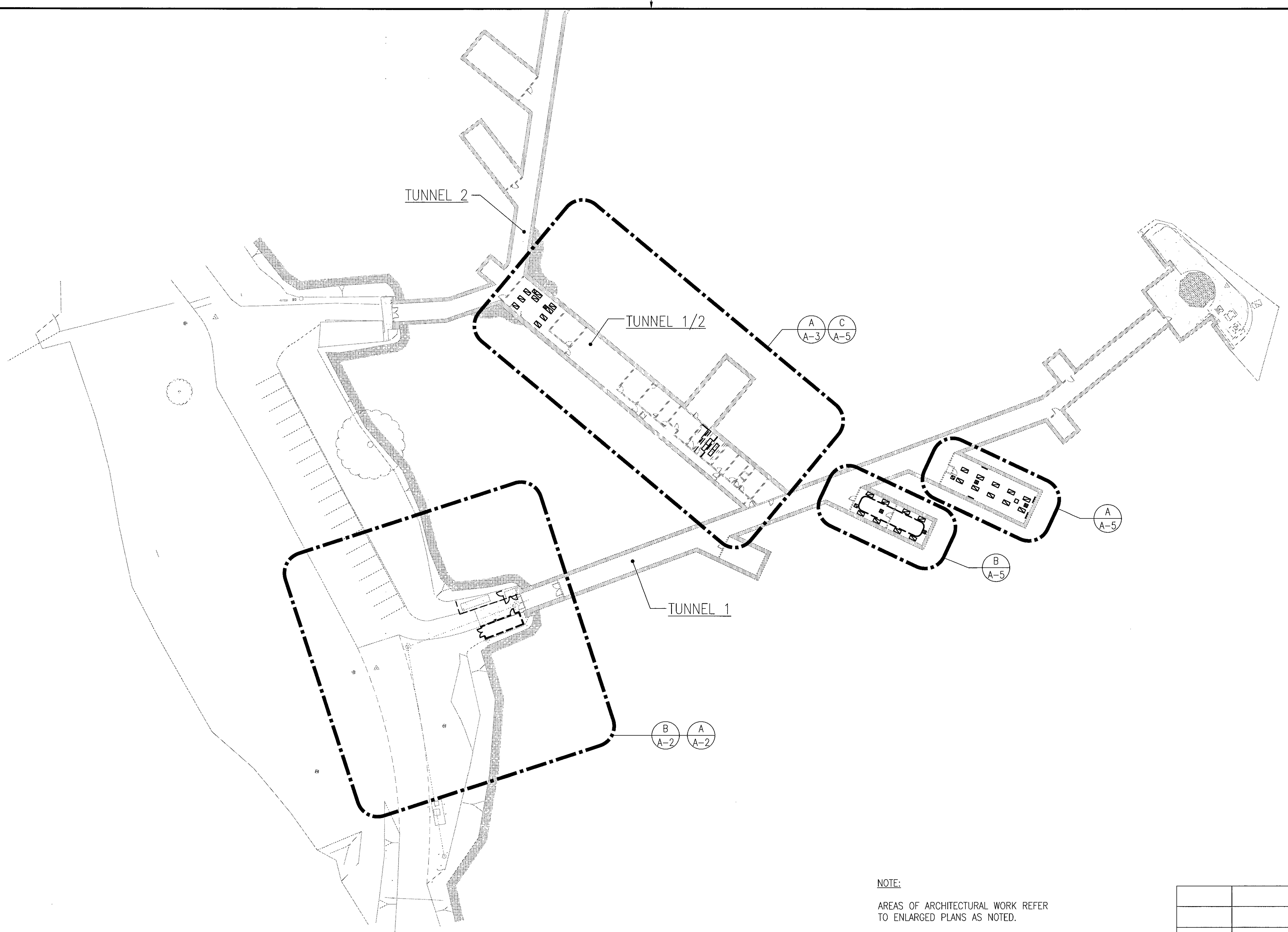
  

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED: DA	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE		
DRAWN: CY	MISCELLANEOUS DETAILS		
SAFETY:	APPROVED:	DATE:	JAN. 31, 2011
SECURITY:	APPROVED:	SCALE:	C-8
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION BY: <i>Paul A. Paul</i>	APPROVED:	DATE:	1-31-11
APRIL 30, 2012	APPROVED:	SCALE:	
EXPIRATION DATE OF THE LICENSE	TAC - HAWAII	154 DES / OCC PROJ ENGR	SHEET 12 of 57

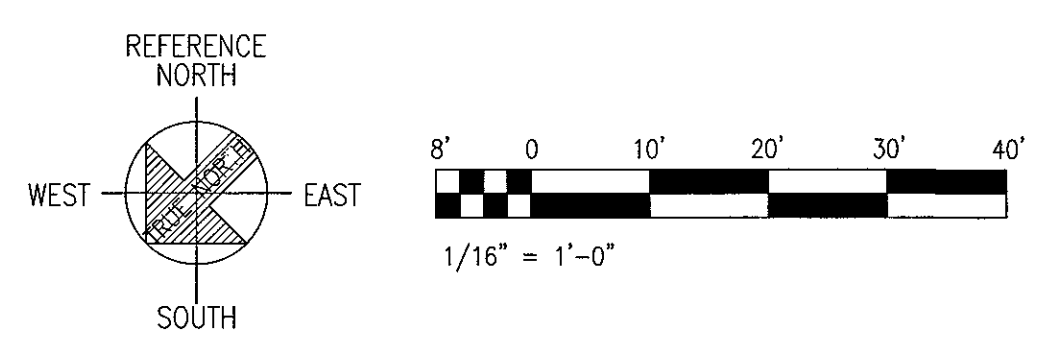
CREATED: 06/02/2010  
 REVISION: 06/02/2010  
 PLOT SCALE: 1=1  
 J:\B No.1\Name: 0911\ C-8.dwg  
 USER: CY

PACIFIC OCEAN

CRATER SIDE



**A** EXISTING SITE AND BUILDING PLAN  
 A-1 SCALE: 1/32" = 1'-0"



NOTE:  
 AREAS OF ARCHITECTURAL WORK REFER  
 TO ENLARGED PLANS AS NOTED.

IF SHEET IS LESS THAN  
 22 x 34  
 IT IS A REDUCED PRINT-  
 SCALE REDUCED ACCORDINGLY

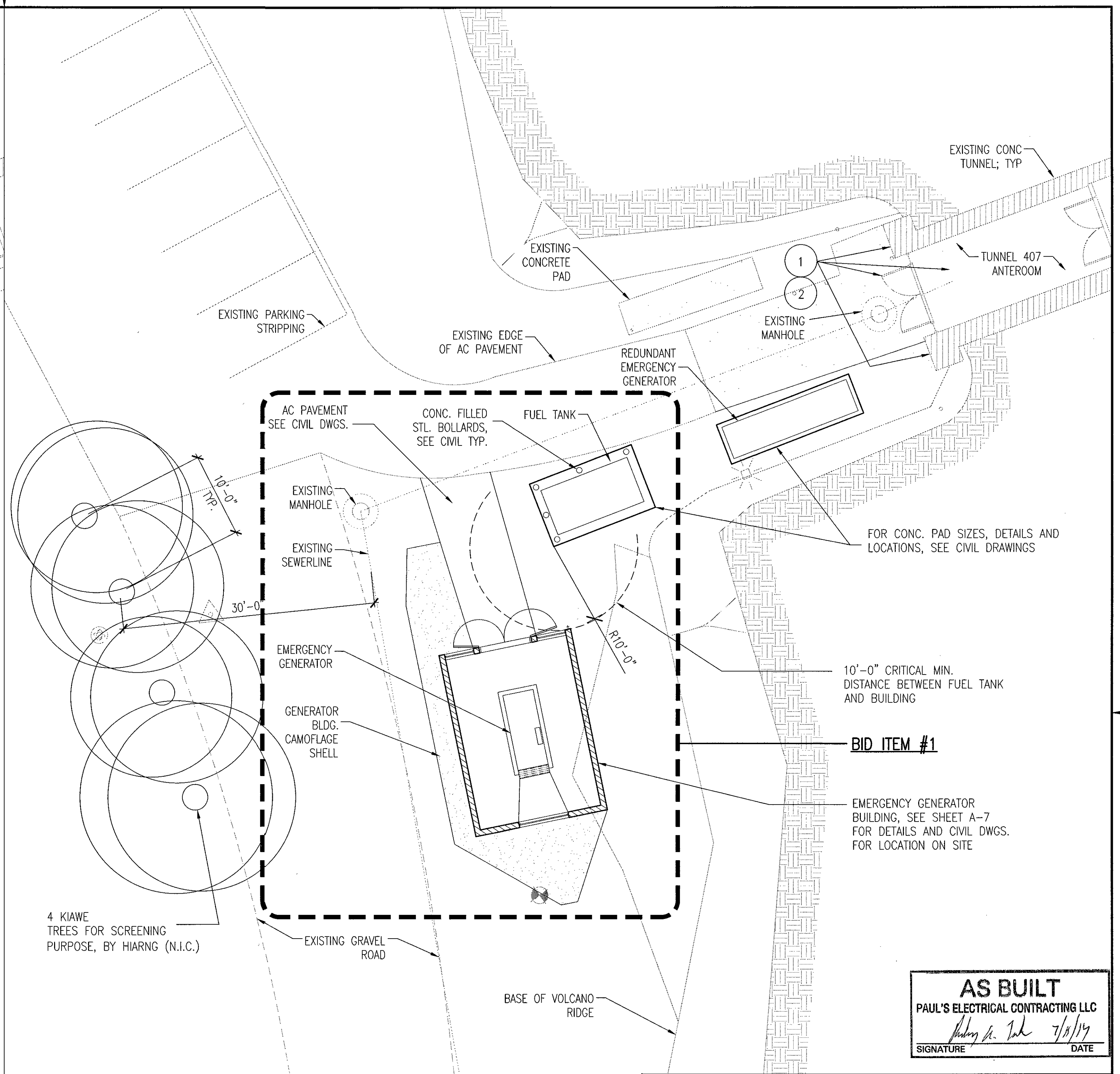
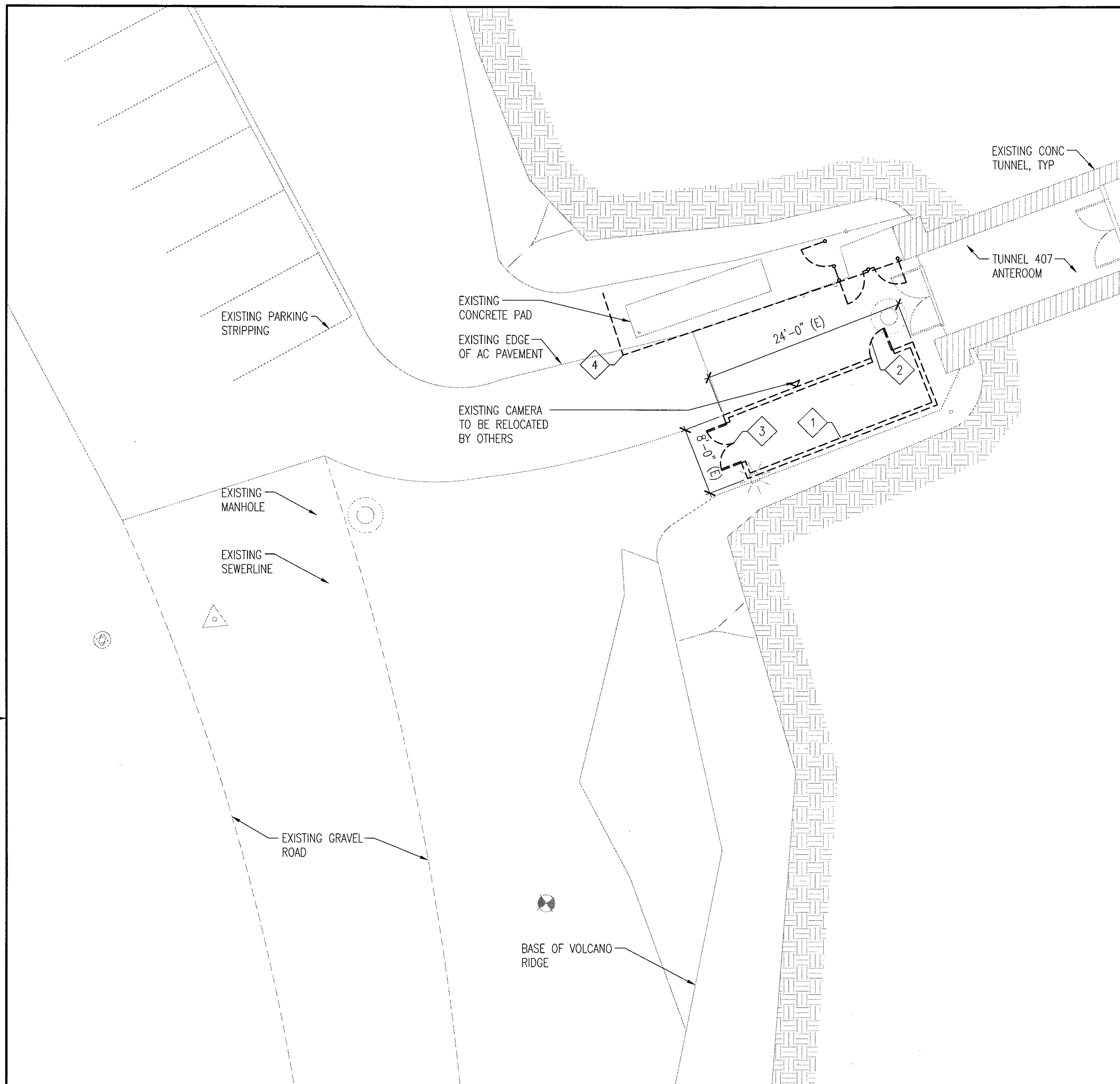
The Contractor will be responsible  
 for coordinating the work among  
 the various trades as necessary  
 to avoid conflicts and to insure  
 the installation of all work within  
 the available space.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul A. Paul* 7/11/11  
 SIGNATURE DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED:	HL	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE	
DRAWN:	MK, RV	EXISTING SITE AND BUILDING PLAN	
SAFETY:		APPROVED:	DATE
SECURITY:		154 GP / ICE	JAN. 31, 2011
APPROVED:		154 GP / CC	SCALE:
154 GP / ICE		HAWK / CC	ENG #
HAWK / CC		APPROVED:	
APPROVED:		154 CES / CEC PROJ ENGR	SHEET 13 of 57

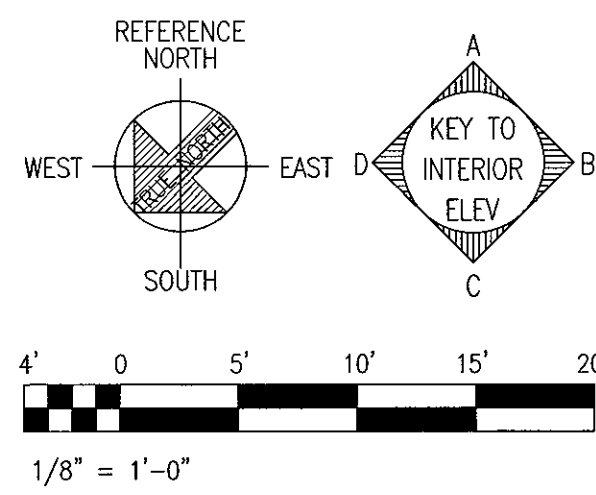
**HERBERT S.F. LEONG**  
 LICENSED PROFESSIONAL ARCHITECT  
 No. 04050  
 HAWAII, U.S.A.  
 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME  
 OR UNDER MY SUPERVISION



**B**  
A-2 ENLARGED DEMO PLAN-MAIN TUNNEL ENTRANCE  
SCALE: 1/8" = 1'-0"

- DEMOLITION LEGEND:**
- 1 REMOVE EXST CMU GENERATOR ENCLOSURE, AND CONC. SLAB, TYP
  - 2 REMOVE EXST DOOR, TYP
  - 3 REMOVE EXST DOUBLE DOOR, TYP
  - 4 REMOVE EXST CHAINLINK FENCE, TYP, PATCH CONC. SLAB TO REMAIN

- NOTES:**
1. CONTRACTOR TO COORDINATE AND INCLUDE ALL DEMOLITION SHOWN ON THIS SHEET AND ON CIVIL, MECHANICAL AND ELECTRICAL DEMO SHEETS.
  2. REFER TO CIVIL TO LAYOUT NEW CONSTRUCTION OF CONCRETE PADS AND EMERGENCY GENERATOR BLDG.



**A**  
A-2 ENLARGED SITE PLAN-MAIN TUNNEL ENTRANCE  
SCALE: 1/8" = 1'-0"

- FLOOR PLAN LEGEND:**
- 1 REPAIR AND PATCH ALL DAMAGED CONC. OF SPALLS BY CHIPPING OUT CONC. TREAT EXPOSED REINF. STEEL W/ EPOXY AND PATCH W/ NON-SHRINK GROUT, REPAIR ALL HAIRLINE CRACKS W/ SEALANT, ALL RUSTED STEEL TO BE CLEANED OR REPLACED. REMOVE ALL CHIPPING OF PAINT, RUST AND PREP AREA PRIOR TO NEW FINISH. PAINT ALL SURFACES AT ENTRANCE TO MATCH SURROUNDING AREA. TYPICAL AT TUNNEL 1 SOUTH ENTRANCE REFER TO SHEET A-11 FOR DETAILS AND COORD W/ STRUCT DWGS.
  - 2 THIS IS A HISTORICAL FACILITY. EXISTING BULLET HOLES ARE NOT TO BE TOUCHED AND SHALL REMAIN.
- IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY
- The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

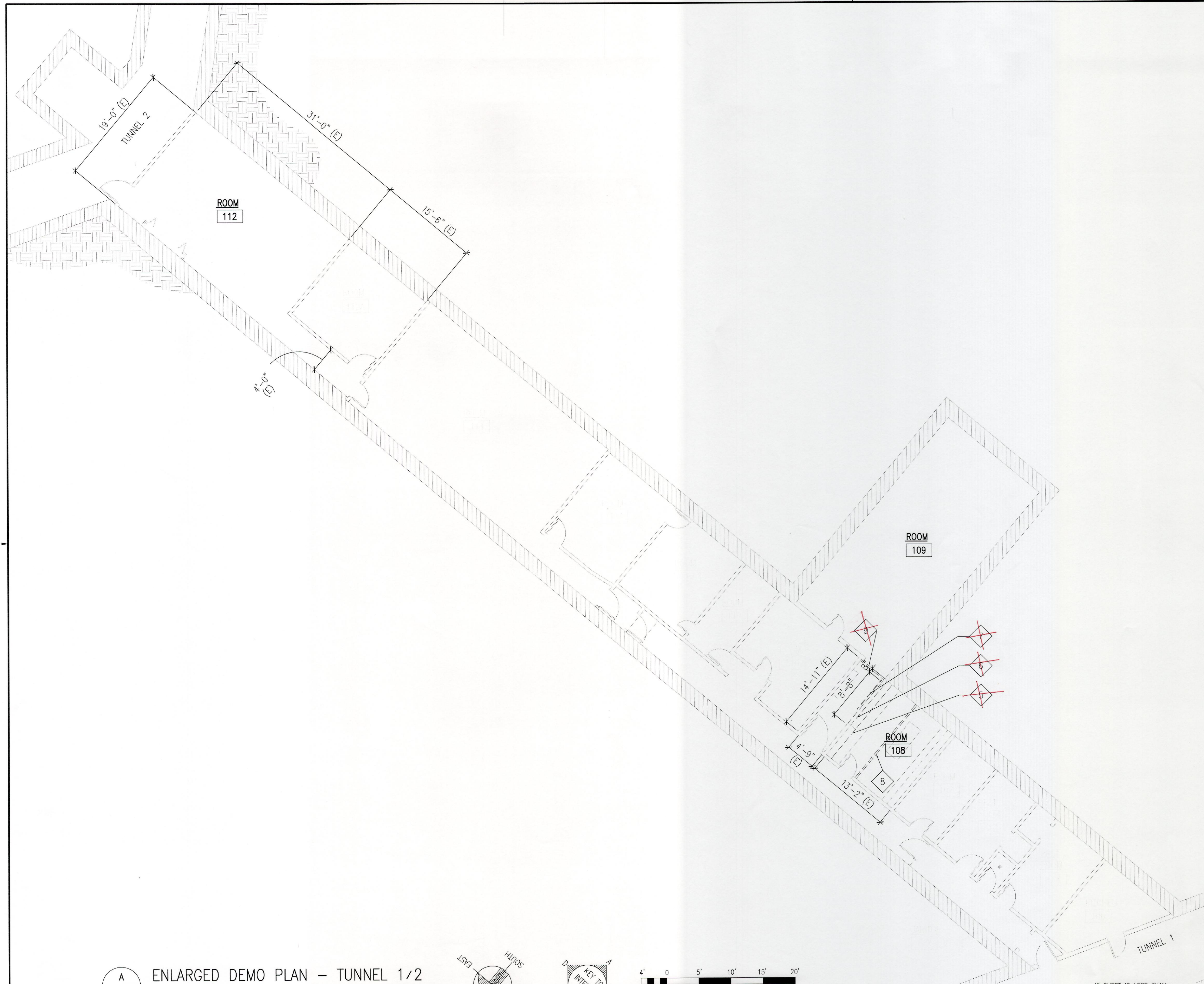
RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

HERBERT S.F. LEONG  
LICENSED PROFESSIONAL ARCHITECT  
No. 04050  
HAWAII, U.S.A.  
EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

DESIGNED: HL		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DRAWN: MK, RV		BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE	
SAFETY:		ENLARGED DEMO PLAN AND NEW SITE PLAN - MAIN TUNNEL ENTRANCE	
SECURITY:			
APPROVED: 154 GP / BGE	APPROVED: 154 GP / CC	DATE	JAN. 31, 2011
APPROVED: HANG / CC	APPROVED: HANG / CCE	SCALE	
APPROVED:	APPROVED:	DWG #	A-2
TAC - HAWAII	154 CBS / CCE PROJ ENGR	SHEET	14 of 57

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul's* DATE: 7/2/17



DEMOLITION LEGEND:

- ~~5~~ REMOVE SHELVING TO ACCOMMODATE OPENING
- ~~6~~ CUT 4'-8" X 8'-8" OPENING IN CONC. WALL AND SHELVING, SEE SHEET A-8
- ~~7~~ RELOCATE WHITEBOARD, TYP
- ~~8~~ CONTRACTOR TO CONSTRUCT FULL HEIGHT TEMPORARY DUST SCREEN BARRIER WALL PRIOR TO DEMOLITION IN THIS ROOM TO PROTECT EXISTING ELECTRONIC EQUIPMENT FROM DUST AND DEBRIS. REMOVE DUST SCREEN BARRIER AFTER NEW CONSTRUCTION
- ~~9~~ CONTRACTOR TO CONSTRUCT FULL HEIGHT TEMPORARY DUST SCREEN BARRIER WALL. CONTRACTOR SHALL COORDINATE BARRIER CONSTRUCTION WITH CUTTING AND DEMO PROCESS OF OPENING. BARRIER SHALL BE POSITIONED SO THAT DUST AND DEBRIS DOES NOT ENTER ROOM 109. REMOVE DUST SCREEN BARRIER AFTER CONSTRUCTION IS COMPLETE.

DELETED FROM CONTRACT

NOTES:

1. CONTRACTOR TO COORDINATE AND INCLUDE ALL DEMOLITION SHOWN ON THIS SHEET WITH THE STRUCTURAL, MECHANICAL AND ELECTRICAL DEMO SHEETS.
2. CLEAN ROOM (LIGHTS, WALLS AND ETC.) AFTER COMPLETION OF CONSTRUCTION.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul J. Jahn* 7/11/17  
 SIGNATURE DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

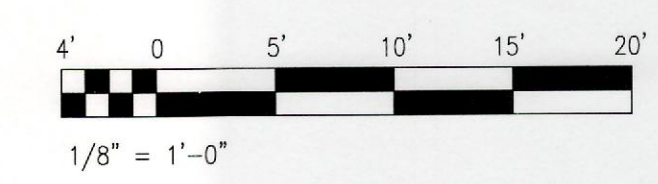
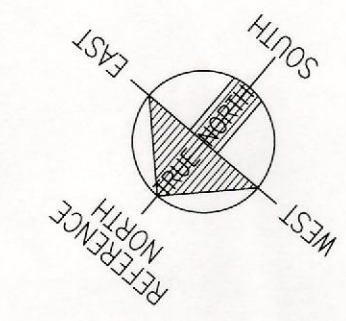
RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.  
 HERBERT S.F. LEONG LICENSED PROFESSIONAL ARCHITECT No. 04050 HAWAII, U.S.A.  
 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: HL  
 DRAWN: MK, RV  
 BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE  
 ENLARGED DEMO PLAN - TUNNEL 1/2

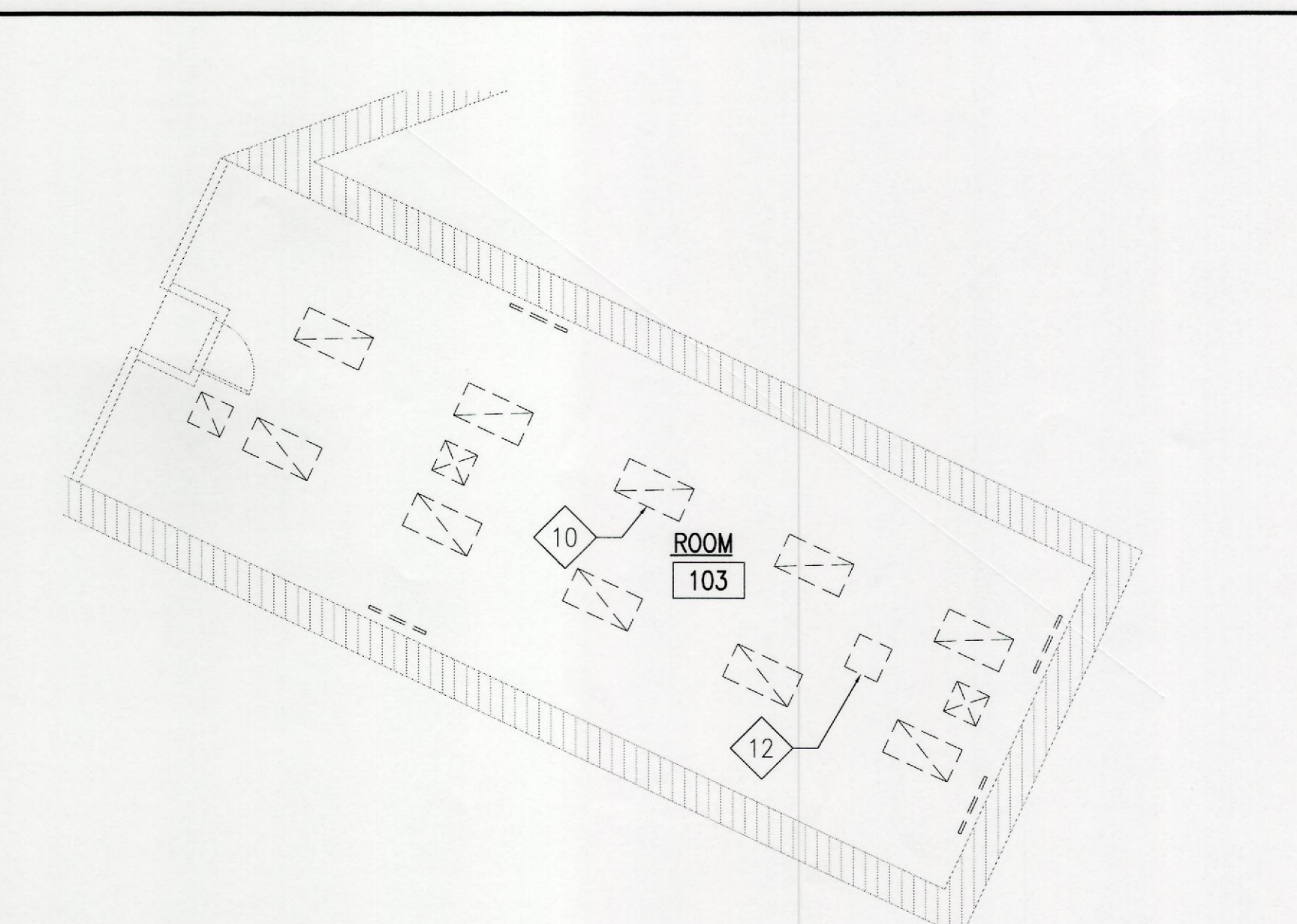
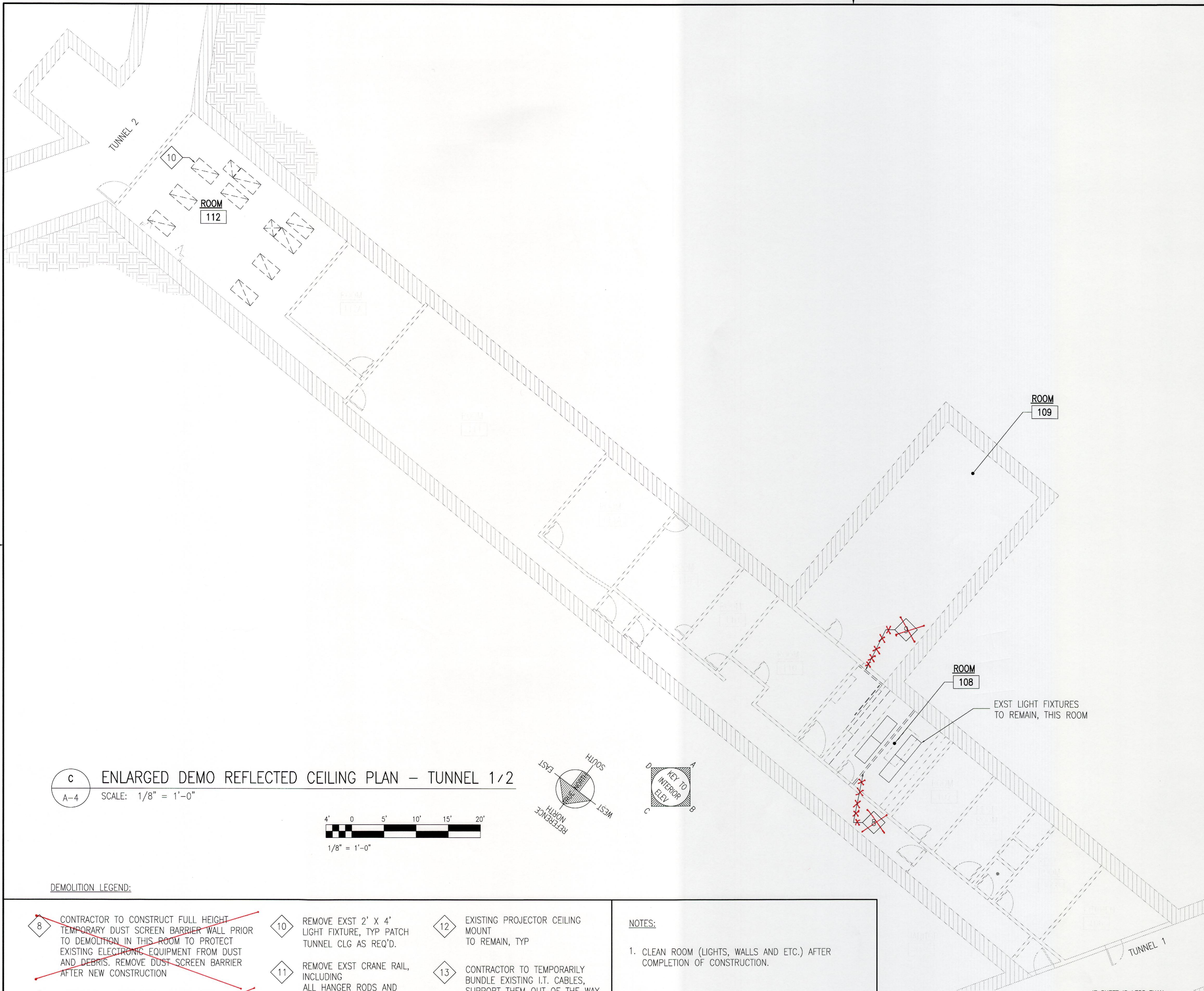
APPROVED:	APPROVED:	DATE:
154 GP / BCE	154 GP / CC	JAN. 31, 2011
APPROVED:	APPROVED:	SCALE:
DWG / CC	DWG / CDE	DWG #
		A-3
TAG - HAWAII	154 CES / CEC PROJ ENGR	SHEET 15 of 57

A ENLARGED DEMO PLAN - TUNNEL 1/2  
 A-3 SCALE: 1/8" = 1'-0"

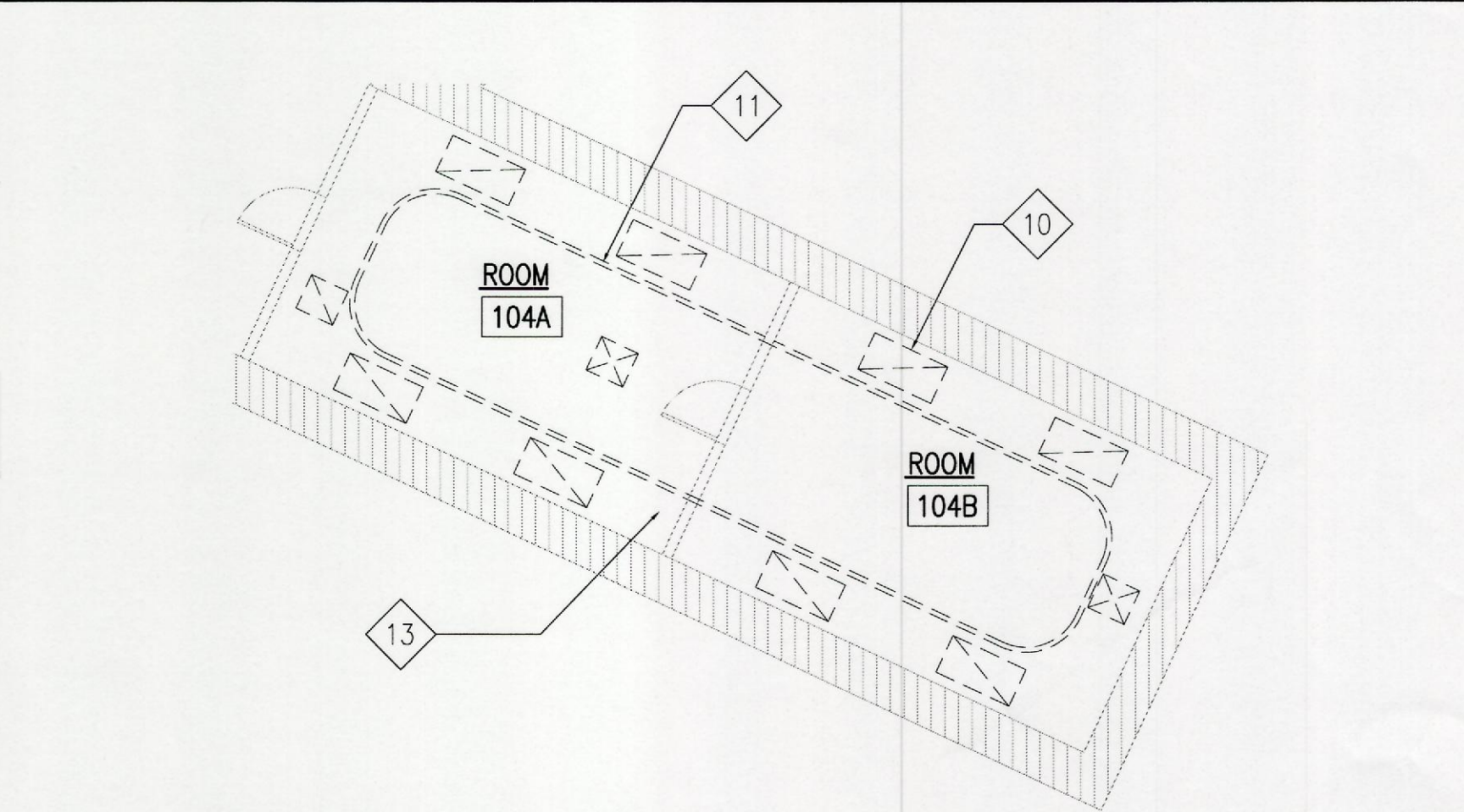


IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

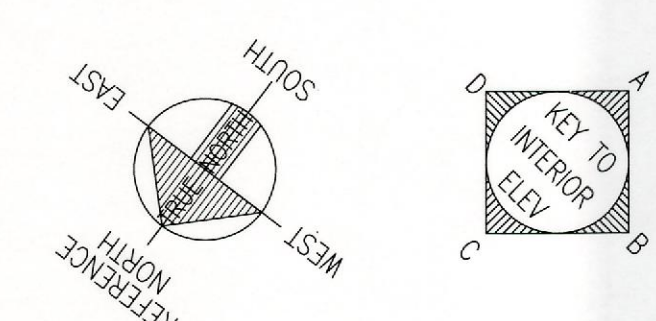
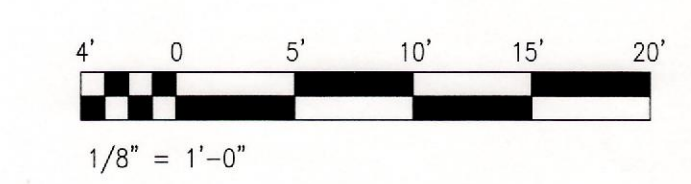


**A** ENLARGED DEMO REFLECTED CEILING PLAN - ROOM 103  
 A-4 SCALE: 1/8" = 1'-0"



**B** ENLARGED DEMO REFLECTED CEILING PLAN - ROOM 104  
 A-4 SCALE: 1/8" = 1'-0"

**C** ENLARGED DEMO REFLECTED CEILING PLAN - TUNNEL 1/2  
 A-4 SCALE: 1/8" = 1'-0"



**DEMOLITION LEGEND:**

- ~~8~~ CONTRACTOR TO CONSTRUCT FULL HEIGHT TEMPORARY DUST SCREEN BARRIER WALL PRIOR TO DEMOLITION IN THIS ROOM TO PROTECT EXISTING ELECTRONIC EQUIPMENT FROM DUST AND DEBRIS. REMOVE DUST SCREEN BARRIER AFTER NEW CONSTRUCTION
- ~~9~~ CONTRACTOR TO CONSTRUCT FULL HEIGHT TEMPORARY DUST SCREEN BARRIER WALL. CONTRACTOR SHALL COORDINATE BARRIER CONSTRUCTION WITH CUTTING AND DEMO PROCESS OF OPENING. BARRIER SHALL BE POSITIONED SO THAT DUST AND DEBRIS DOES NOT ENTER ROOM 109. REMOVE DUST SCREEN BARRIER AFTER CONSTRUCTION IS COMPLETE.
- 10 REMOVE EXST 2' X 4' LIGHT FIXTURE, TYP PATCH TUNNEL CLG AS REQ'D.
- 11 REMOVE EXST CRANE RAIL, INCLUDING ALL HANGER RODS AND ETC. TYP PATCH AND REPAIR TUNNEL CEILING AS REQUIRED, MATCH EXISTING
- 12 EXISTING PROJECTOR CEILING MOUNT TO REMAIN, TYP
- 13 CONTRACTOR TO TEMPORARILY BUNDLE EXISTING I.T. CABLES, SUPPORT THEM OUT OF THE WAY WHILE NEW WORK IS IN PROGRESS. CONTRACTOR TO COORDINATE THIS EFFORT WITH HIARNG I.T. PERSON. IF CABLES NEED TO BE DISCONNECTED OR REROUTED, HIARNG I.T. WILL BE RESPONSIBLE.

**NOTES:**  
 1. CLEAN ROOM (LIGHTS, WALLS AND ETC.) AFTER COMPLETION OF CONSTRUCTION.

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY  
 The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 SIGNATURE: *Paul A. Paul* DATE: 7/11/19

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

HERBERT S.F. LEONG  
 LICENSED PROFESSIONAL ARCHITECT  
 No. 04050  
 HAWAII, U.S.A.  
 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

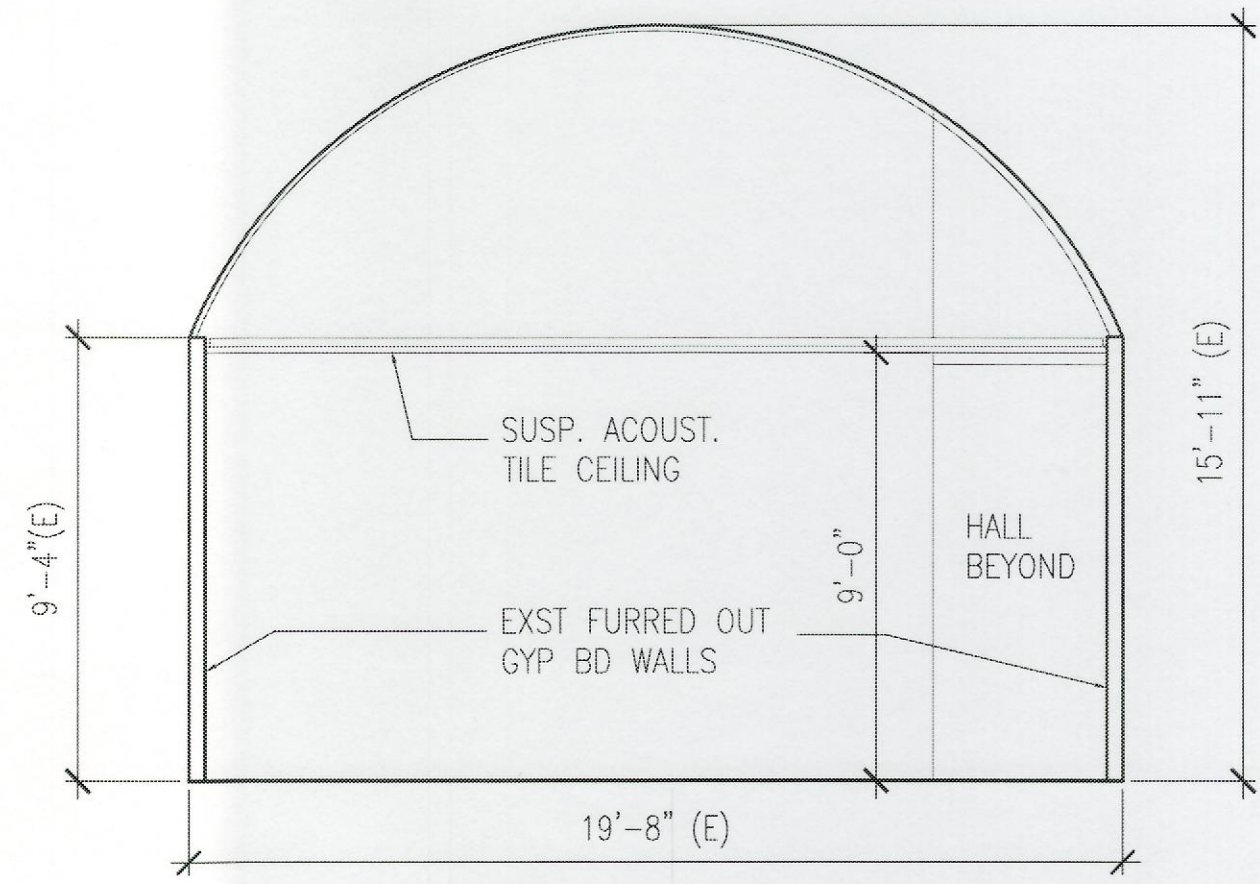
BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

ENLARGED DEMO REFLECTED CEILING PLAN TUNNEL 1/2

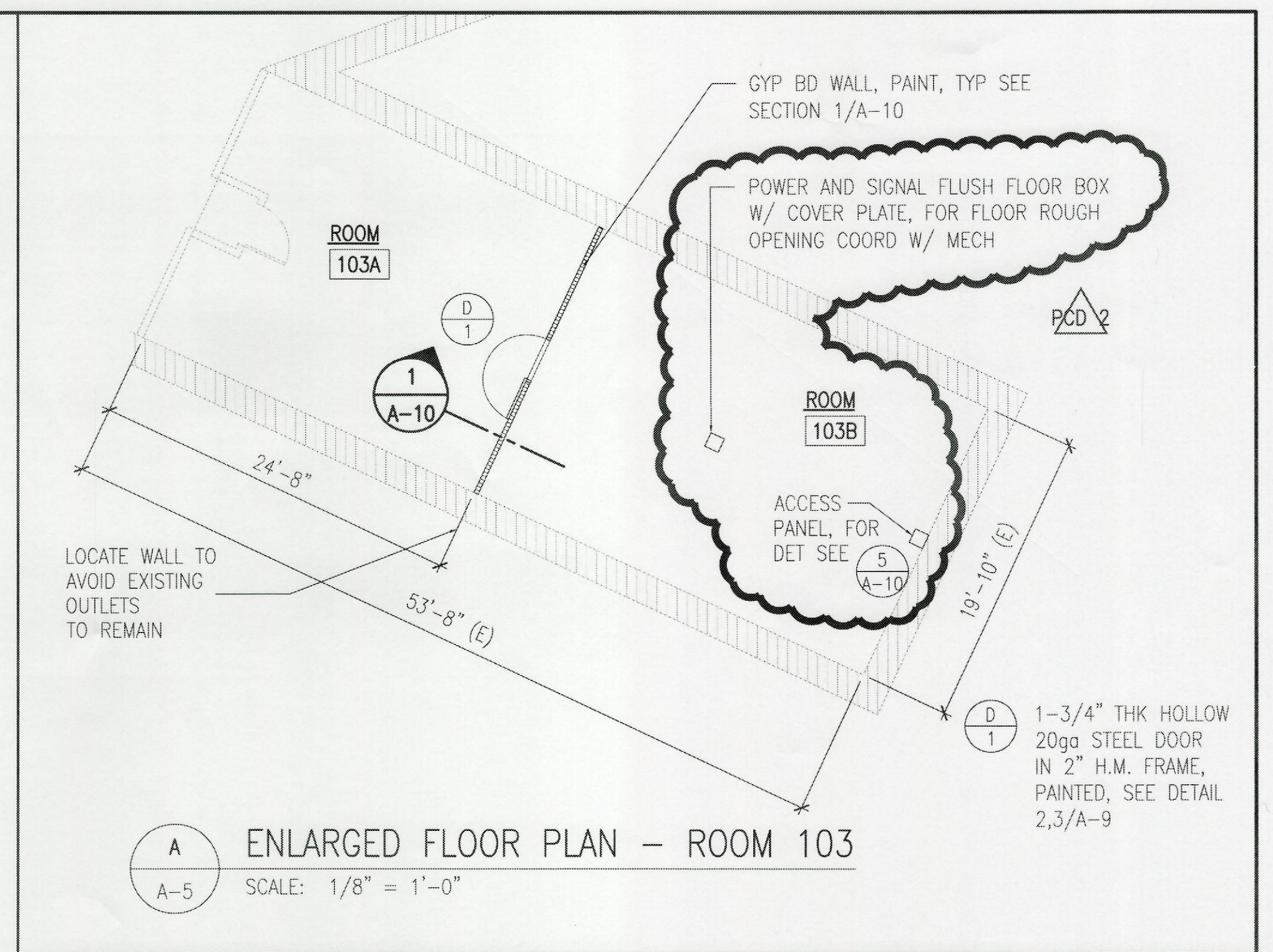
DESIGNED: HL  
 DRAWN: MK, RV  
 SAFETY:  
 SECURITY:  
 APPROVED: 154 GP / BCE  
 APPROVED: 154 GP / CC  
 HANG / CC  
 APPROVED: TAG - HAWAII

DATE: JAN. 31, 2011  
 SCALE:  
 DWG # A-4  
 SHEET 16 of 57

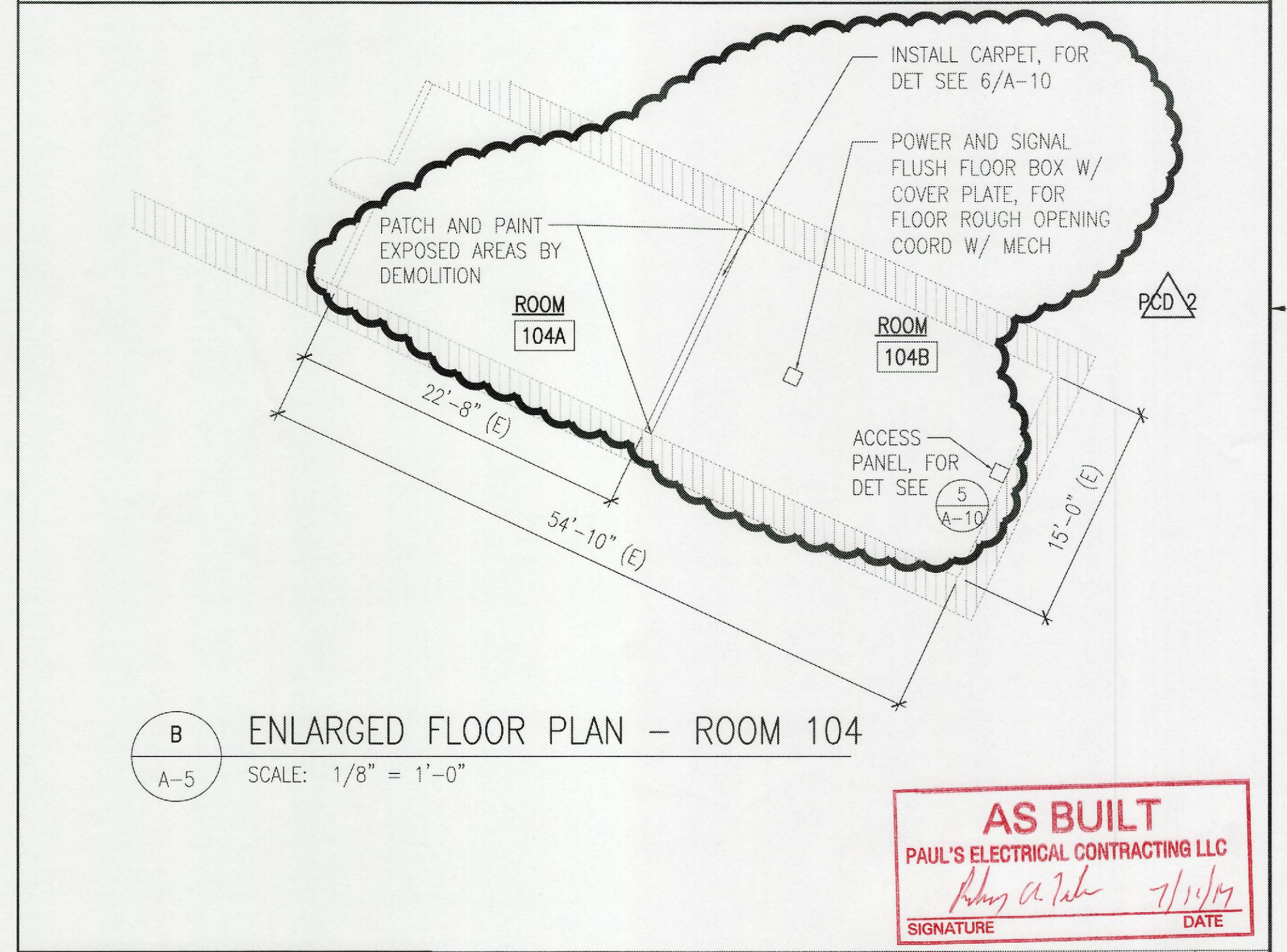




1 SECTION AT ROOM 112  
SCALE: 1/4" = 1'-0"



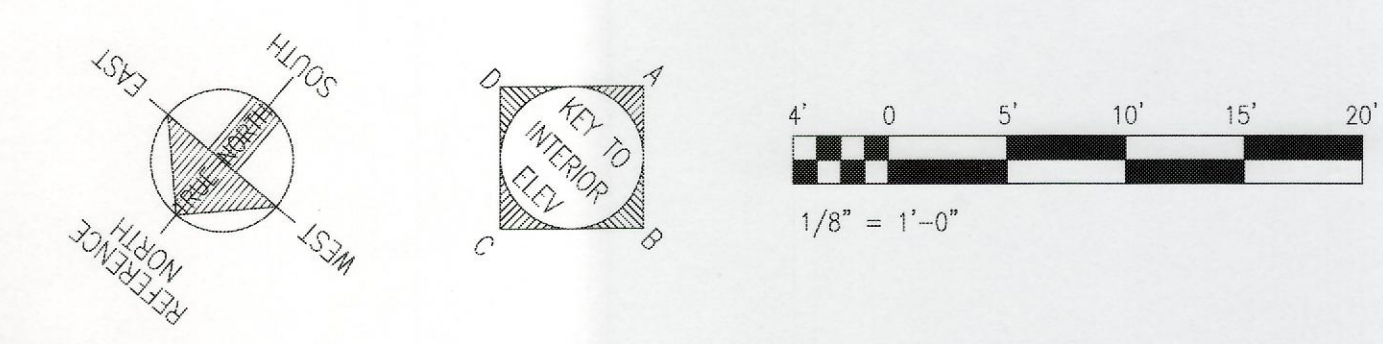
A ENLARGED FLOOR PLAN - ROOM 103  
SCALE: 1/8" = 1'-0"



B ENLARGED FLOOR PLAN - ROOM 104  
SCALE: 1/8" = 1'-0"

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul A. Paul* 7/11/12  
SIGNATURE DATE

C ENLARGED FLOOR PLAN - TUNNEL 1/2  
SCALE: 1/8" = 1'-0"



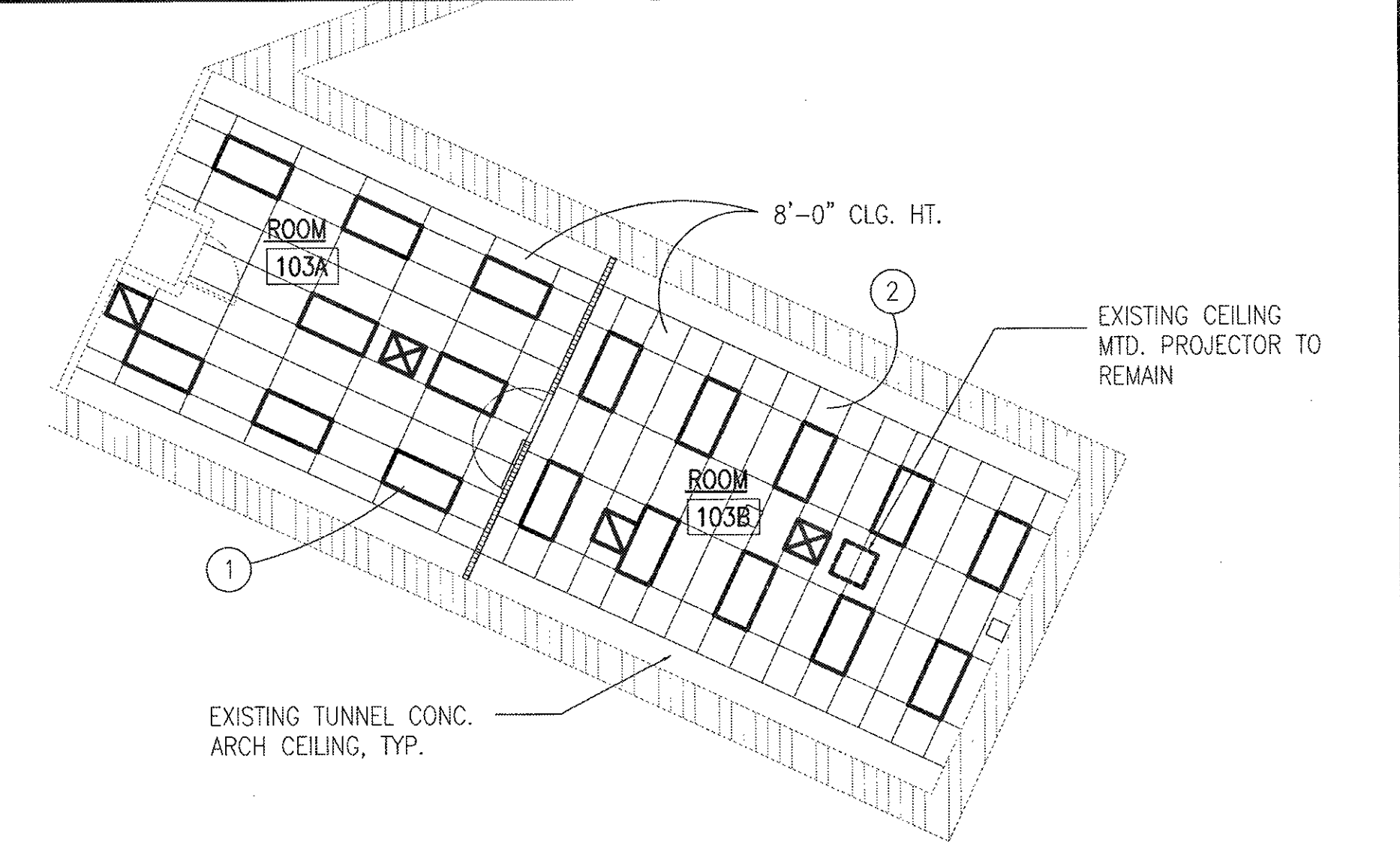
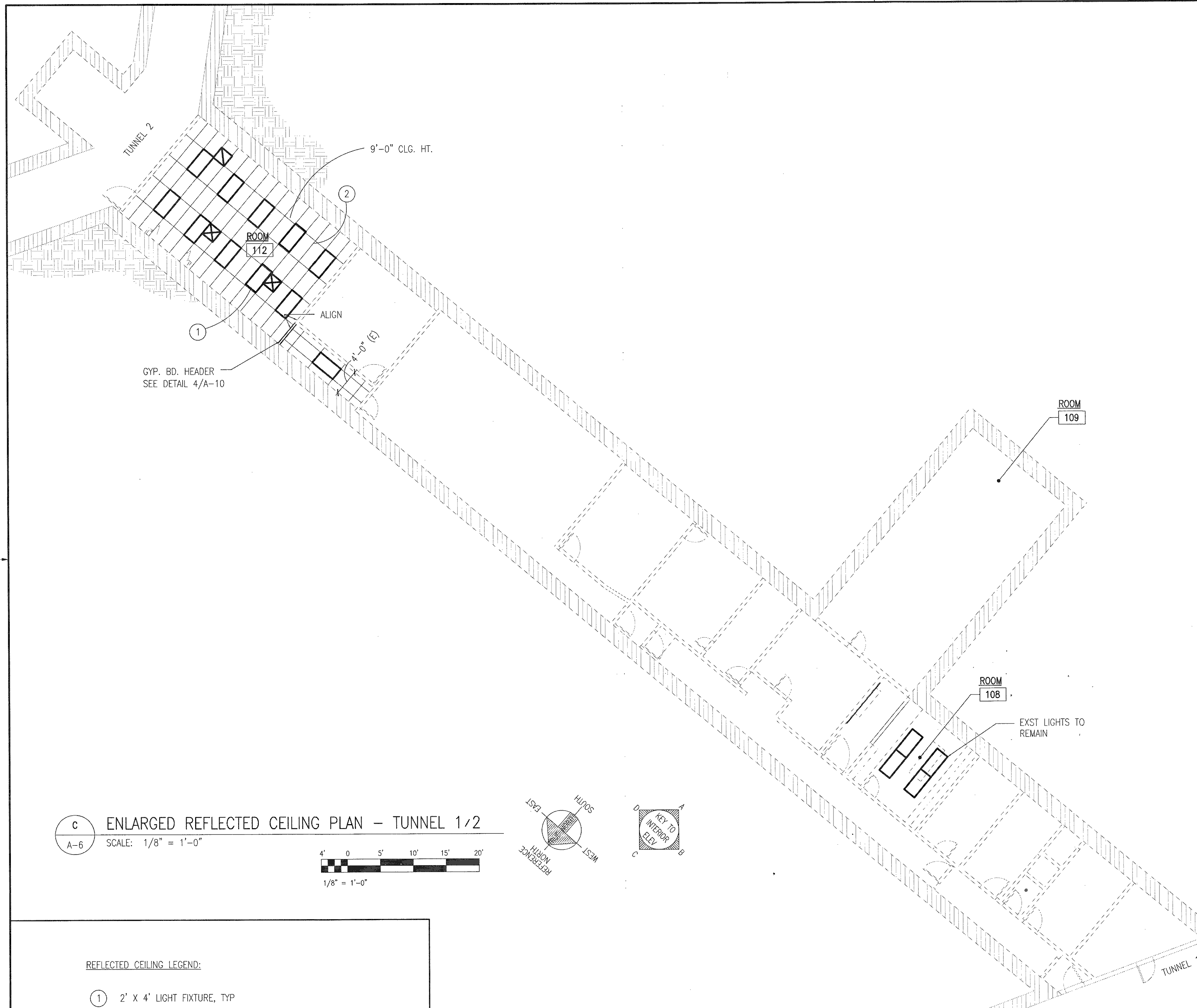
IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY  
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

REVISION NO	DESCRIPTION	DATE	BY	CHK'D
PCD 2	PCD NO.2 WALL REMOVAL AND REPAIR	07/27/2012		
PCD 1	PCD NO.1 CHANGE DOOR MATERIAL	03/12/2012		

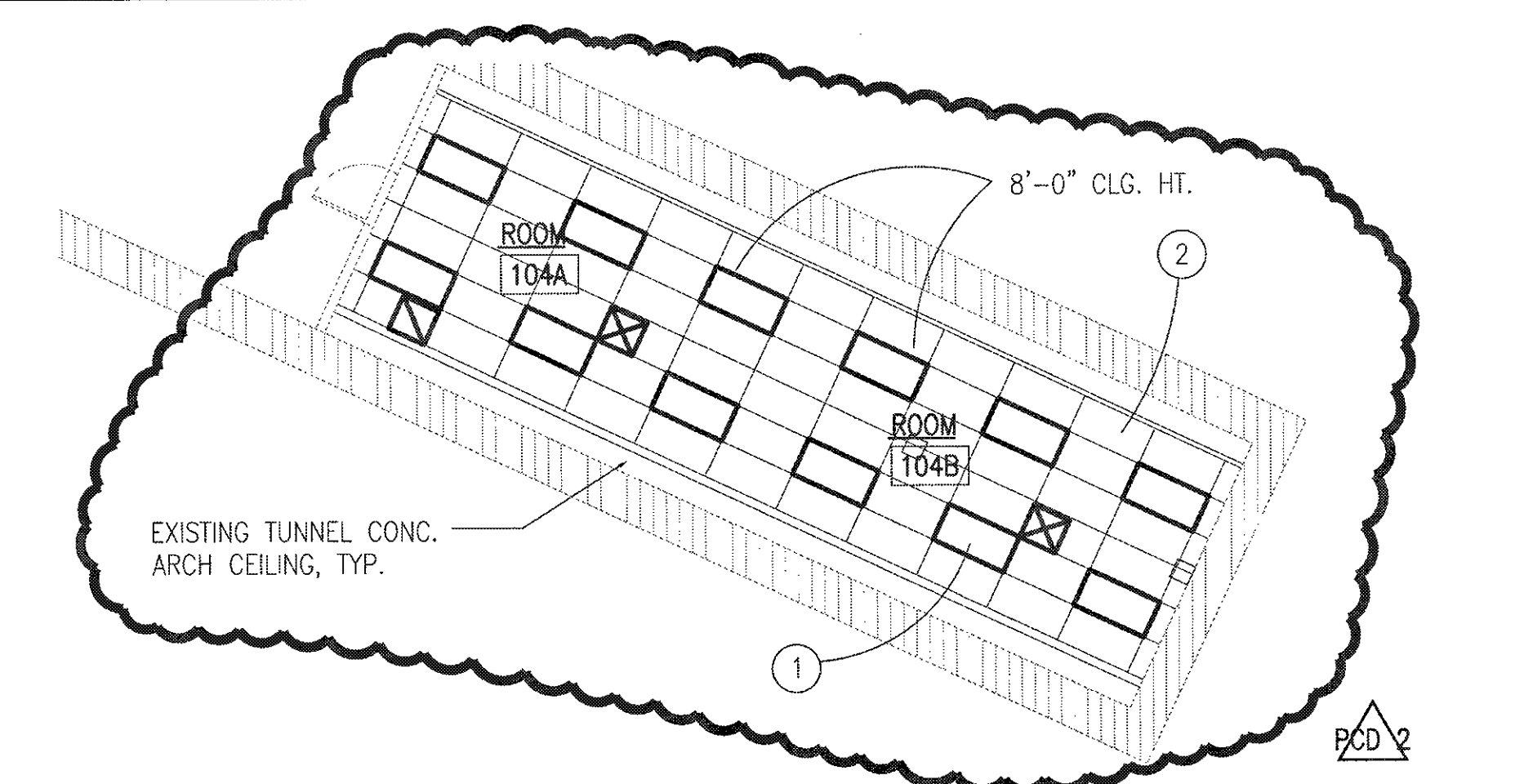
  

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED: HL	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE	DATE: JAN. 31, 2011	
ERAWK: MK, RV		SCALE:	
SAFETY:		DWG #	A-5
SECURITY:		SHEET	17 of 57
APPROVED: 154 GP / BCE	APPROVED: 154 GP / CC		
APPROVED: 154 GP / CC	APPROVED: 154 GP / CC		
APPROVED: TAG - HAWAII	APPROVED: 154 GES / CEC PROJ ENGR		

HERBERT S.F. LEONG  
LICENSED PROFESSIONAL ARCHITECT  
No. 04050  
HAWAII, U.S.A.  
EXP. 4/30/14  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

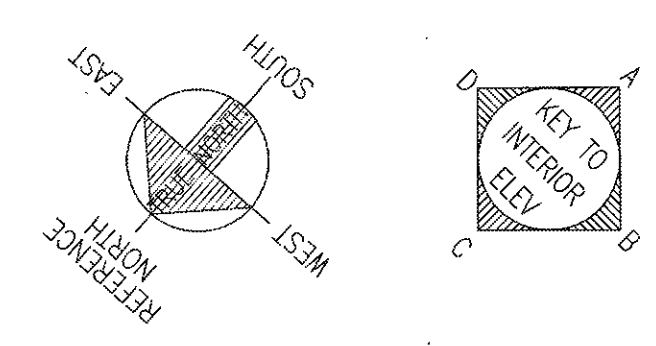
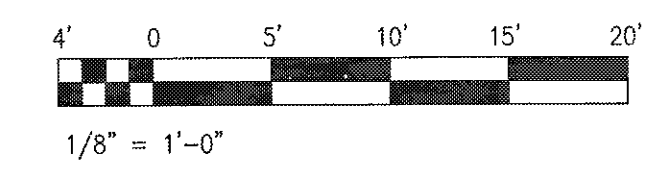


**A** ENLARGED REFLECTED CEILING PLAN - ROOM 103  
 A-6 SCALE: 1/8" = 1'-0"



**B** ENLARGED REFLECTED CEILING PLAN - ROOM 104  
 A-6 SCALE: 1/8" = 1'-0"

**C** ENLARGED REFLECTED CEILING PLAN - TUNNEL 1/2  
 A-6 SCALE: 1/8" = 1'-0"



- REFLECTED CEILING LEGEND:
- ① 2' X 4' LIGHT FIXTURE, TYP
  - ② 2x4 SUSPENDED ACOUSTICAL TILE CEILING

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT—SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

HERBERT S.F. LEONG  
 LICENSED PROFESSIONAL ARCHITECT  
 No. 04060  
 HAWAII, U.S.A.

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: HL  
 DRAWN: MK, RV  
 SAFETY:  
 SECURITY:

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

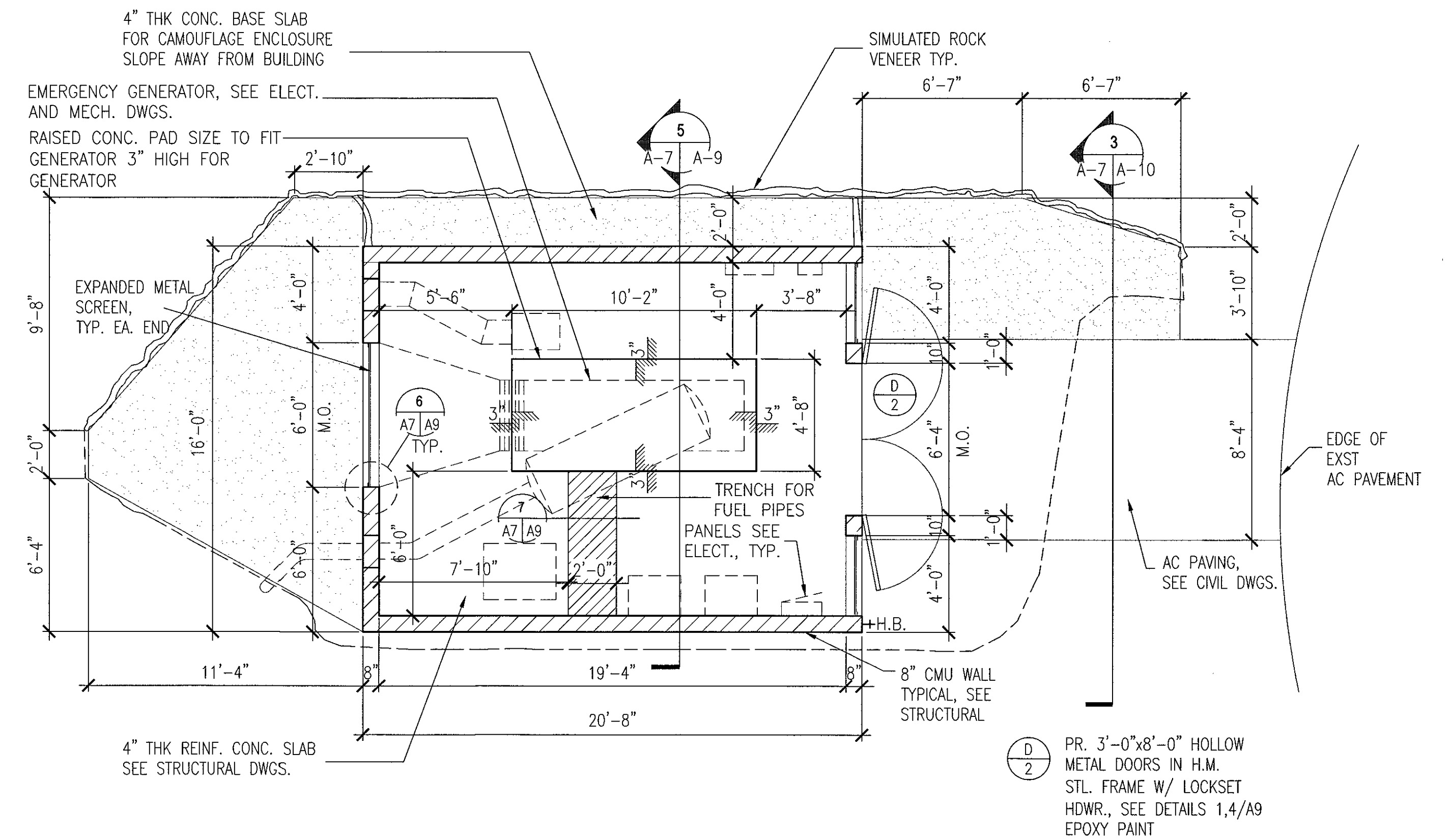
ENLARGED REFLECTED CEILING PLAN - TUNNEL 1/2

APPROVED:	APPROVED:	DATE
154 GP / BCE	154 GP / CC	JAN. 31, 2011
APPROVED:	APPROVED:	SCALE:
HAWK / CC	HAWK / CC	1/8" = 1'-0"
APPROVED:	APPROVED:	FIG #
TAG - HAWAII	154 CES / CEC PROJ ENGR	A-6
		SHEET 18 of 57

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 SIGNATURE: *Paul A. Iw...* DATE: 7/11/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D
PCD 2	PCD NO.2 WALL REMOVAL AND REPAIR	07/27/2012		

BID ITEM #1



1 EMERGENCY GENERATOR BUILDING FLOOR PLAN  
 A-7 SCALE: 1/4" = 1'-0"

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul A. Paul* 7/11/17  
 SIGNATURE DATE

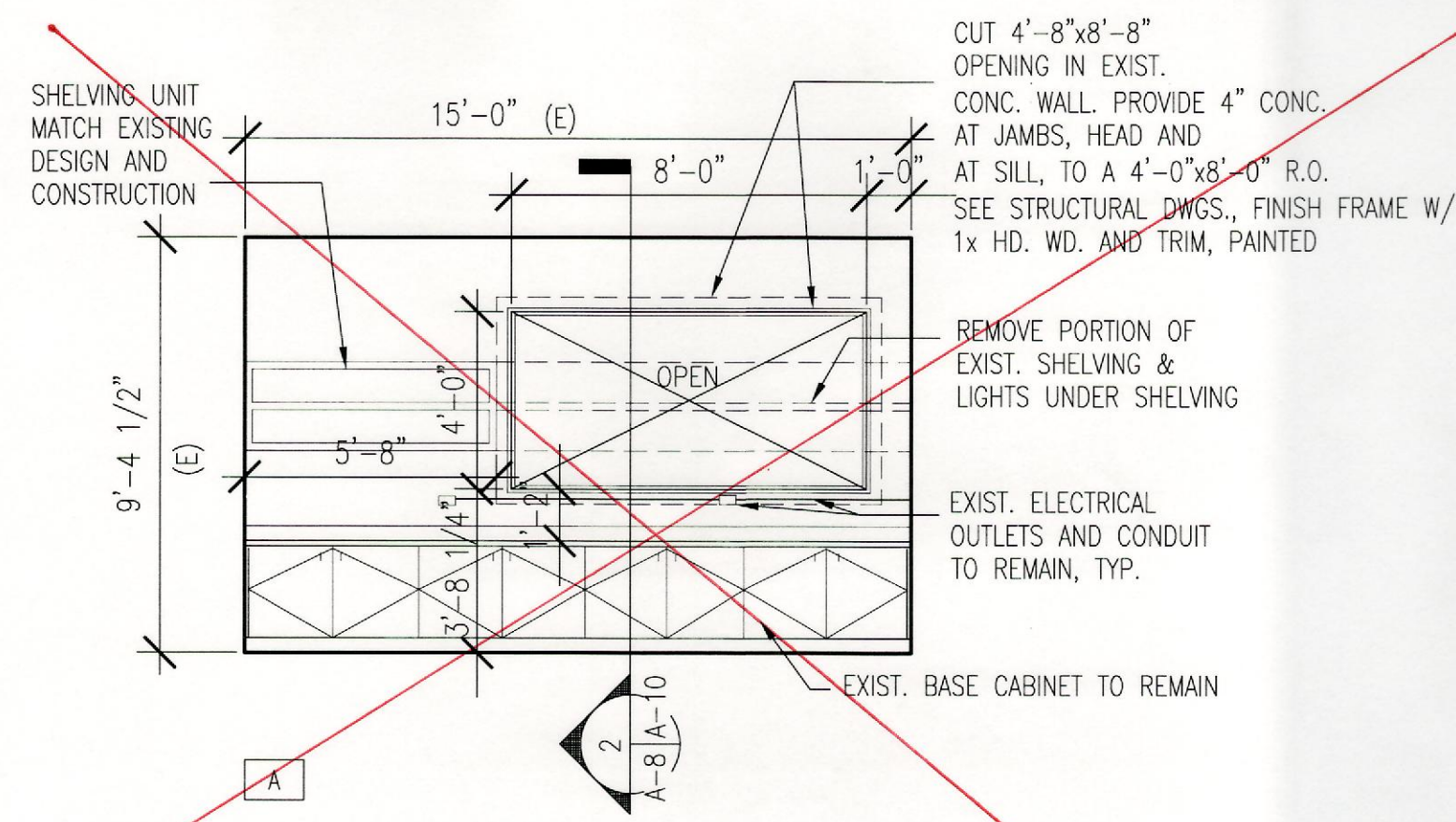
IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT—SCALE REDUCED ACCORDINGLY  
 The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

HERBERT S.F. LEONG  
 LICENSED PROFESSIONAL ARCHITECT  
 No. 04050  
 HAWAII, U.S.A.  
 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

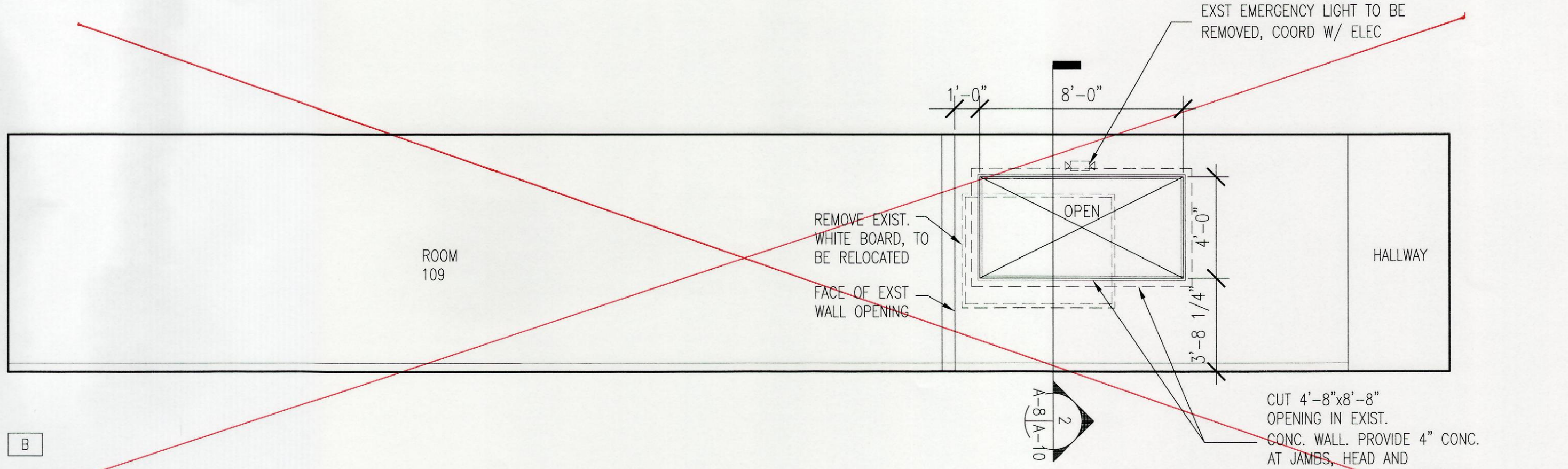
REVISION NO	DESCRIPTION	DATE	BY	CHK'D

DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED: HL DRAWN: MK, RV SAFETY: SECURITY:	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE ENLARGED EMERGENCY GENERATOR BUILDING PLAN
APPROVED: 154 GP / RCE APPROVED: HANG / CC APPROVED: TAC - HAWAII	APPROVED: 154 GP / CC APPROVED: HANG / COE APPROVED: 154 CES / CEC PROJ ENGR
DATE: JAN. 31, 2011	DWG # A-7
SCALE:	SHEET 19 of 57

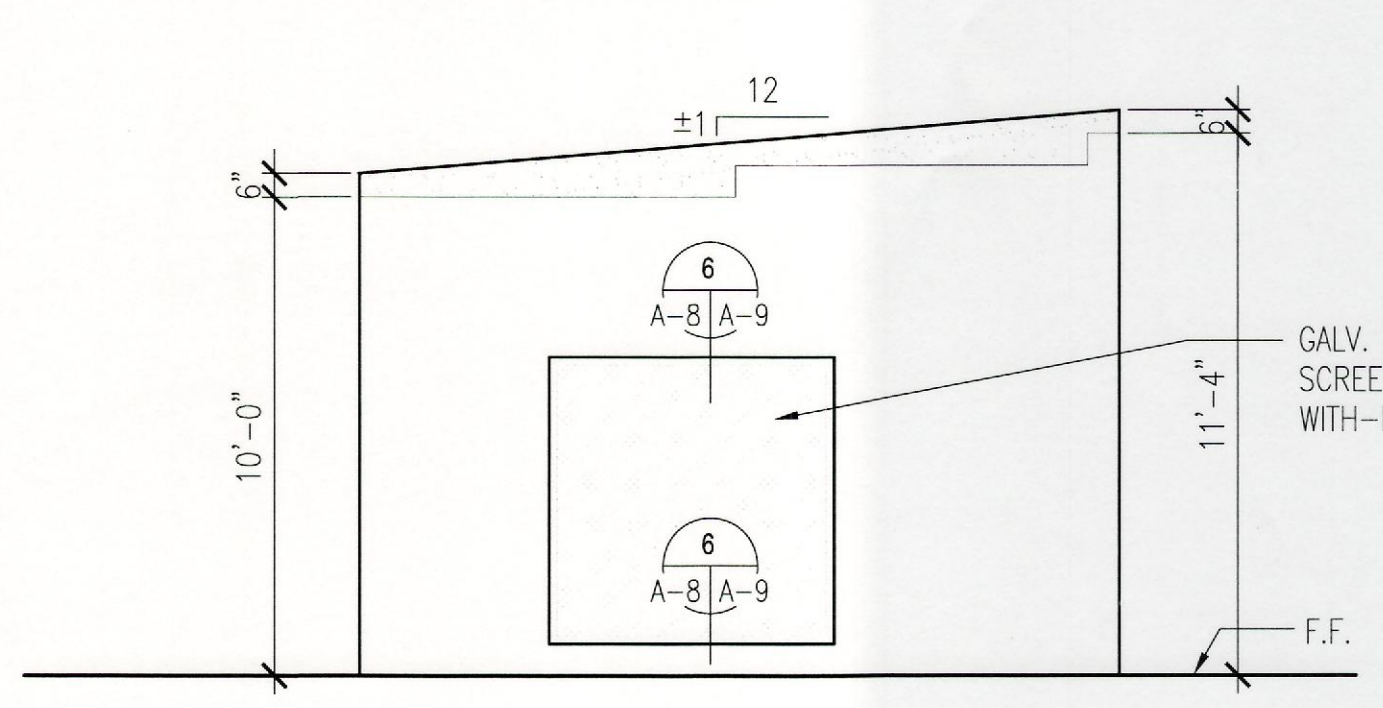


**B** INTERIOR ELEVATION ROOM 108  
A-8 SCALE: 1/4" = 1'-0"

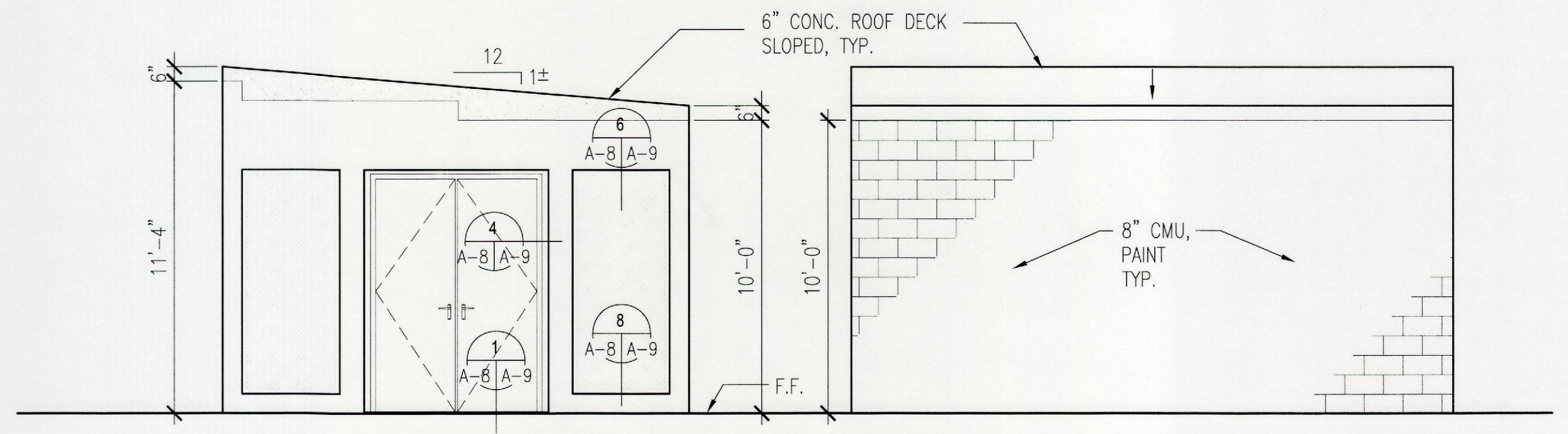
DELETED FROM CONTRACT



**C** INTERIOR ELEVATION ROOM 109  
A-8 SCALE: 1/4" = 1'-0"



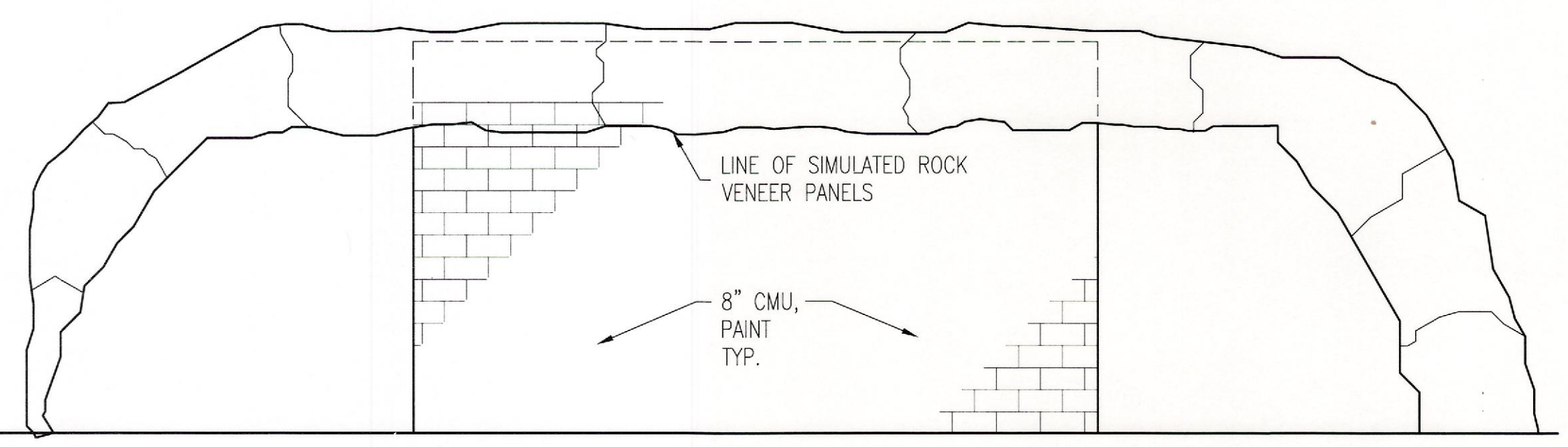
LEFT ELEVATION



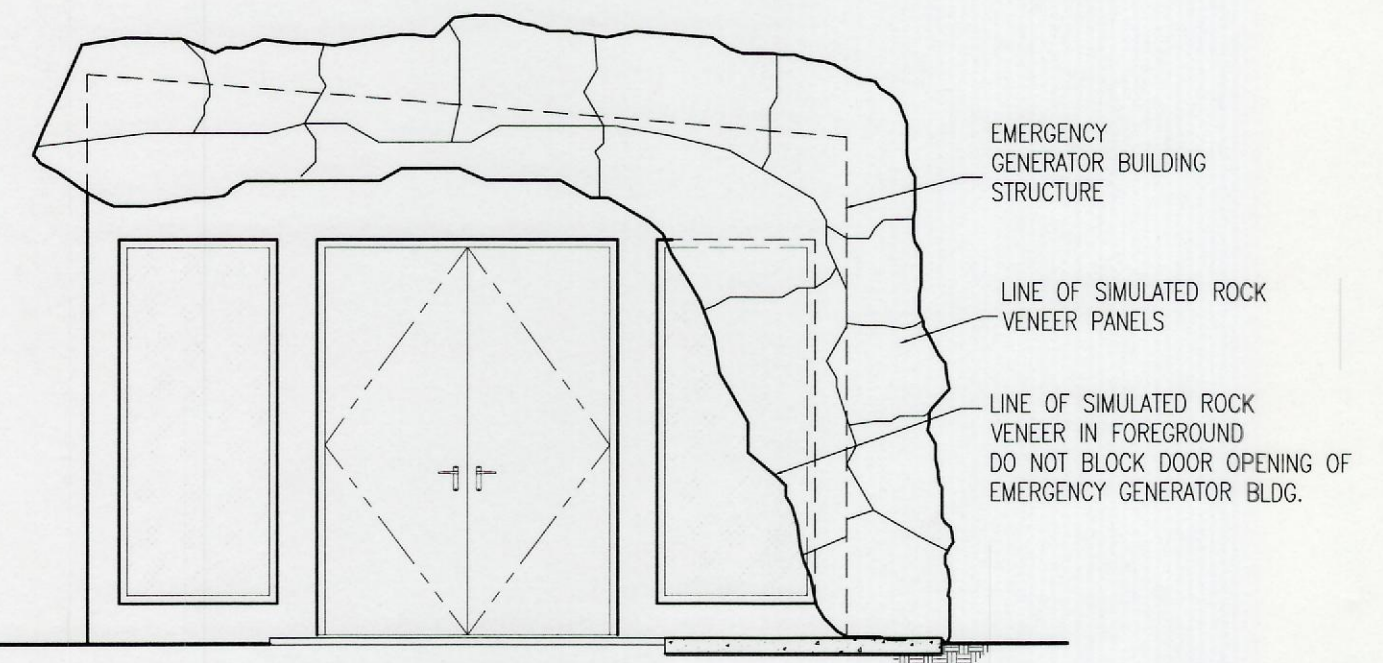
RIGHT ELEVATION

REAR ELEVATION / FRONT SIM.

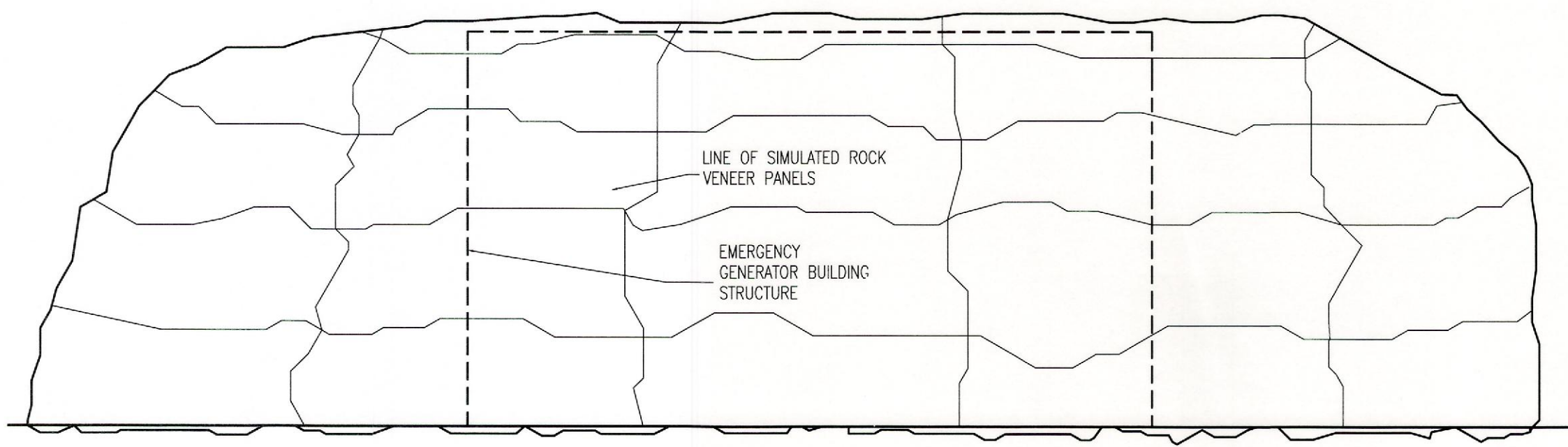
**A** EMERGENCY GENERATOR BUILDING EXTERIOR ELEVATIONS  
A-8 SCALE: 1/4" = 1'-0"



**E** FRONT ELEVATION OF PANELS  
A-8 SCALE: 1/4" = 1'-0"



**D** LEFT SIDE OPP. HAND  
RIGHT SIDE ELEVATION OF PANELS  
A-8 SCALE: 1/4" = 1'-0"



**F** REAR ELEVATION OF PANELS  
A-8 SCALE: 1/4" = 1'-0"

BID ITEM #1

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
Signature: Paul's Electrical Contracting LLC  
Date: 7/11/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: HL  
DRAWN: MK, RV  
SAFETY:  
SECURITY:  
APPROVED: 154 GP / BGE  
DATE: JAN. 31, 2011

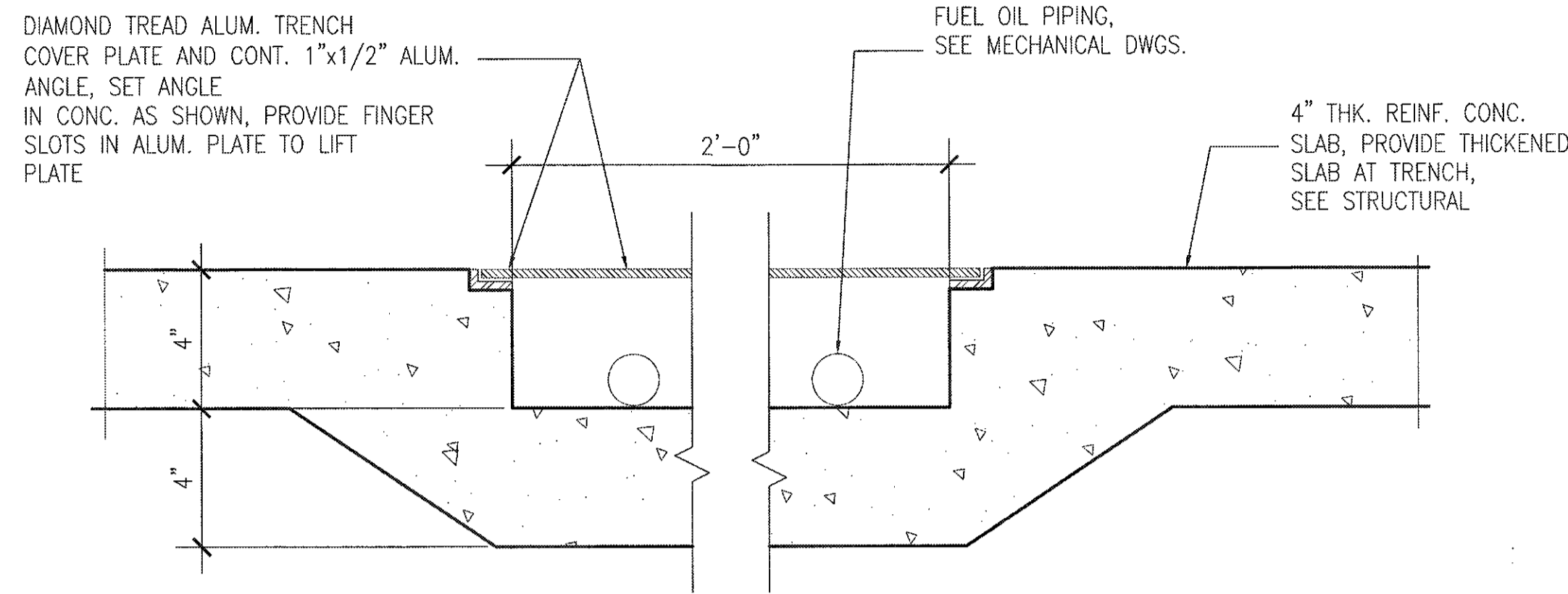
BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE  
INTERIOR AND EXTERIOR ELEVATIONS

SCALE: A-8  
SHEET 20 of 57

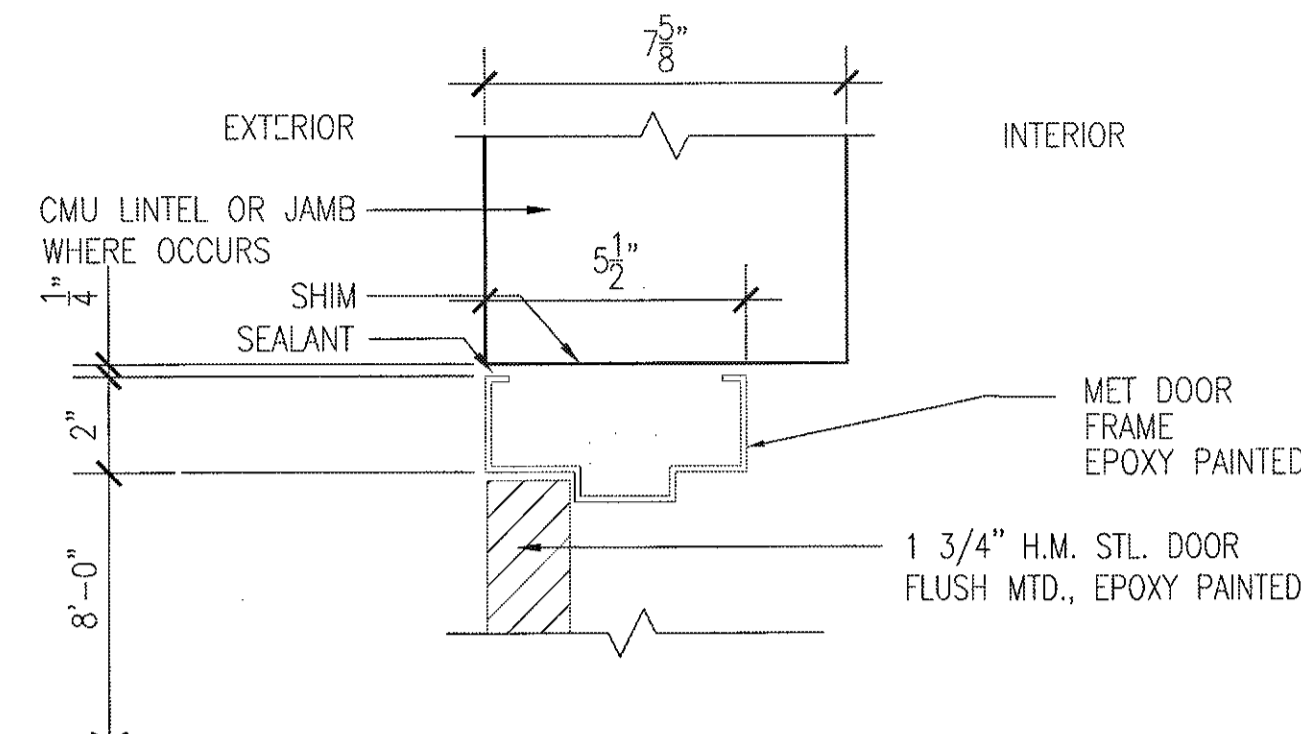
Richard Matsunaga & Associates Architects Inc.  
HERBERT S.F. LEONG  
LICENSED PROFESSIONAL ARCHITECT  
No. 04050  
HAWAII, U.S.A.  
EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

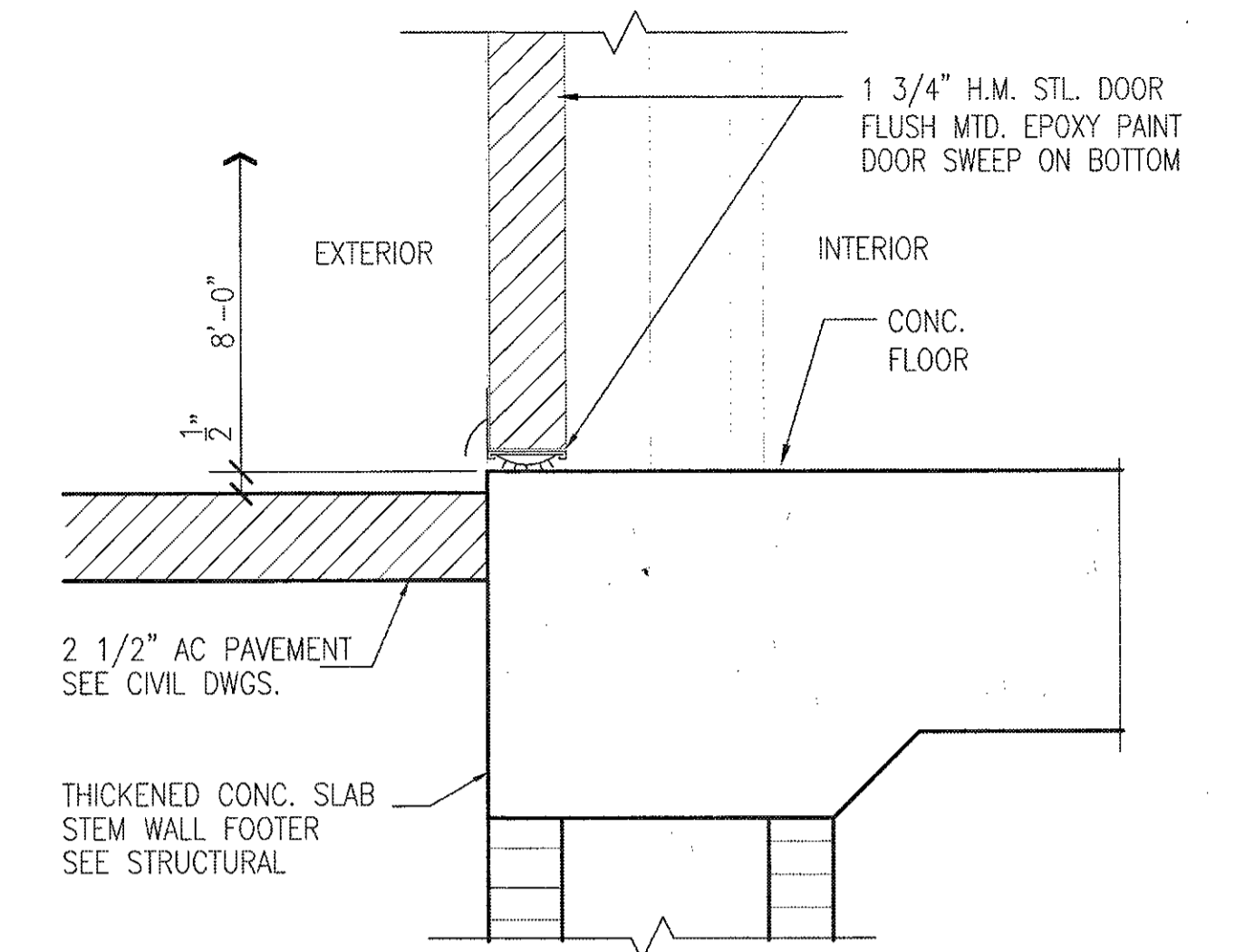
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.



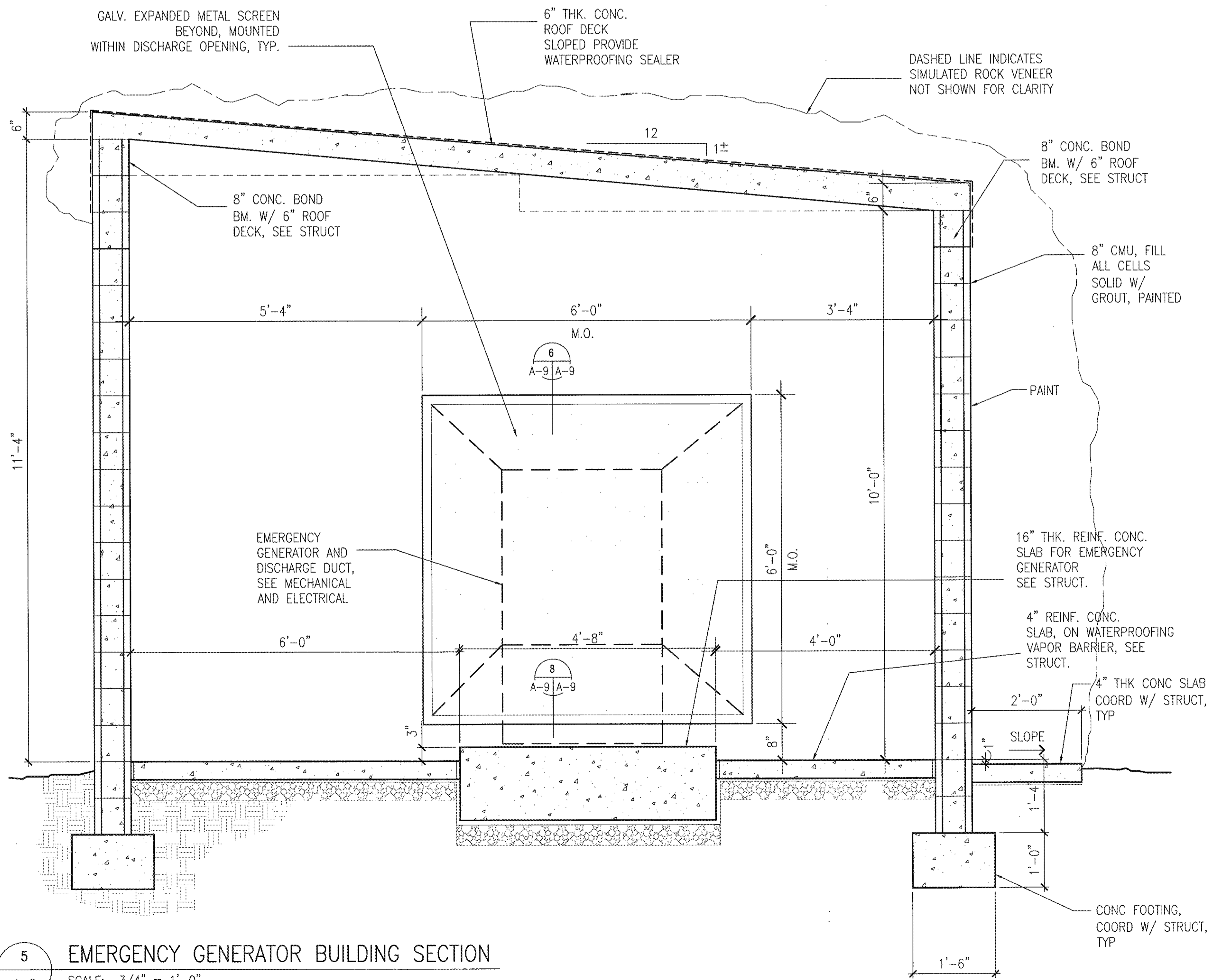
7 TRENCH DETAIL  
SCALE: 3" = 1'-0"



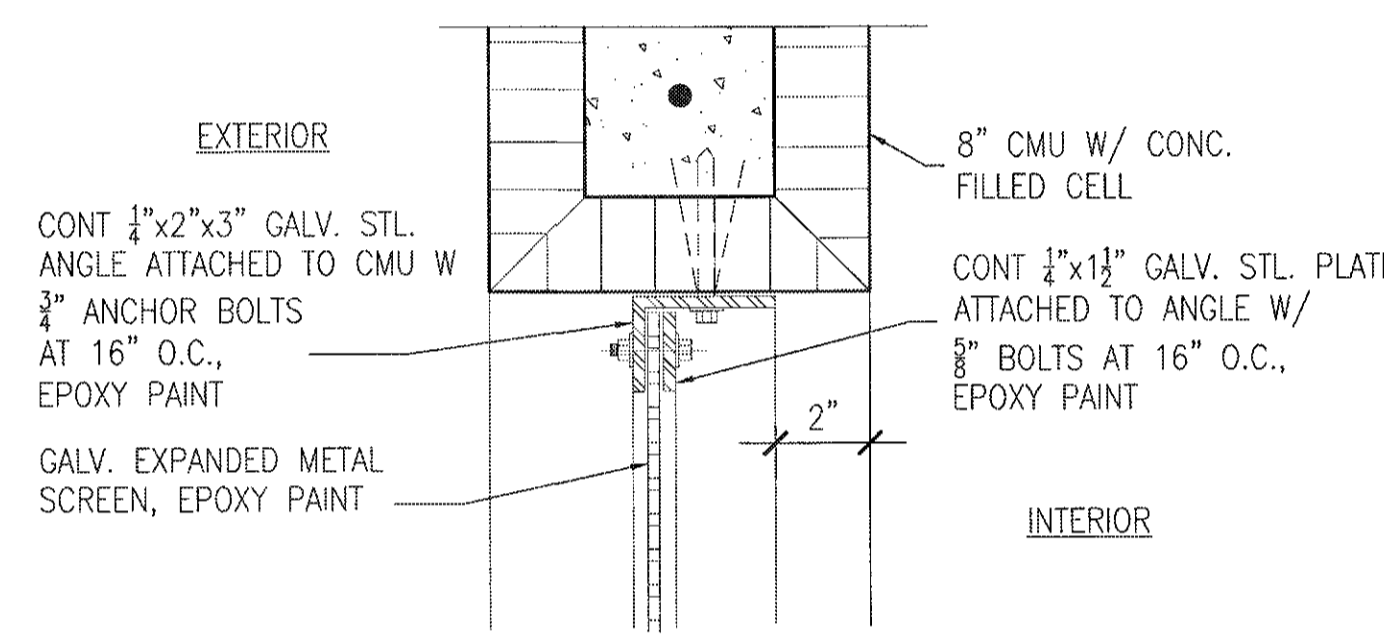
4 HEAD AND JAMB DETAIL  
SCALE: 3" = 1'-0"



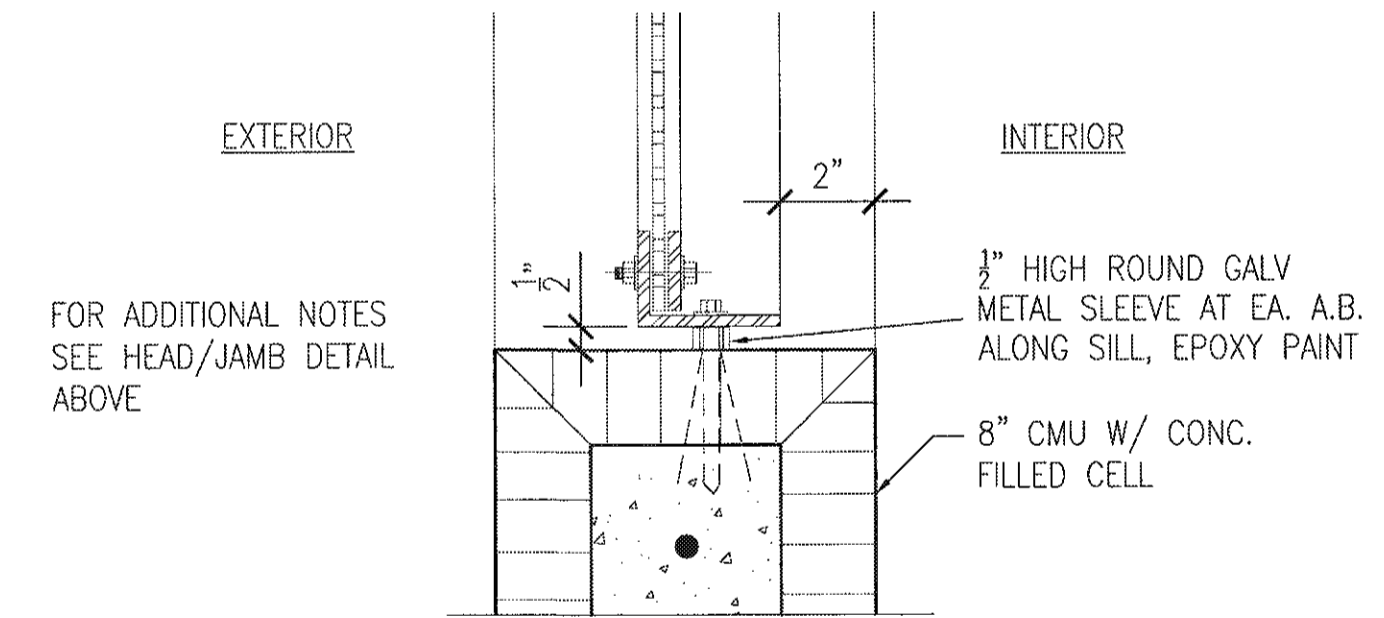
1 THRESHOLD DETAIL  
SCALE: 3" = 1'-0"



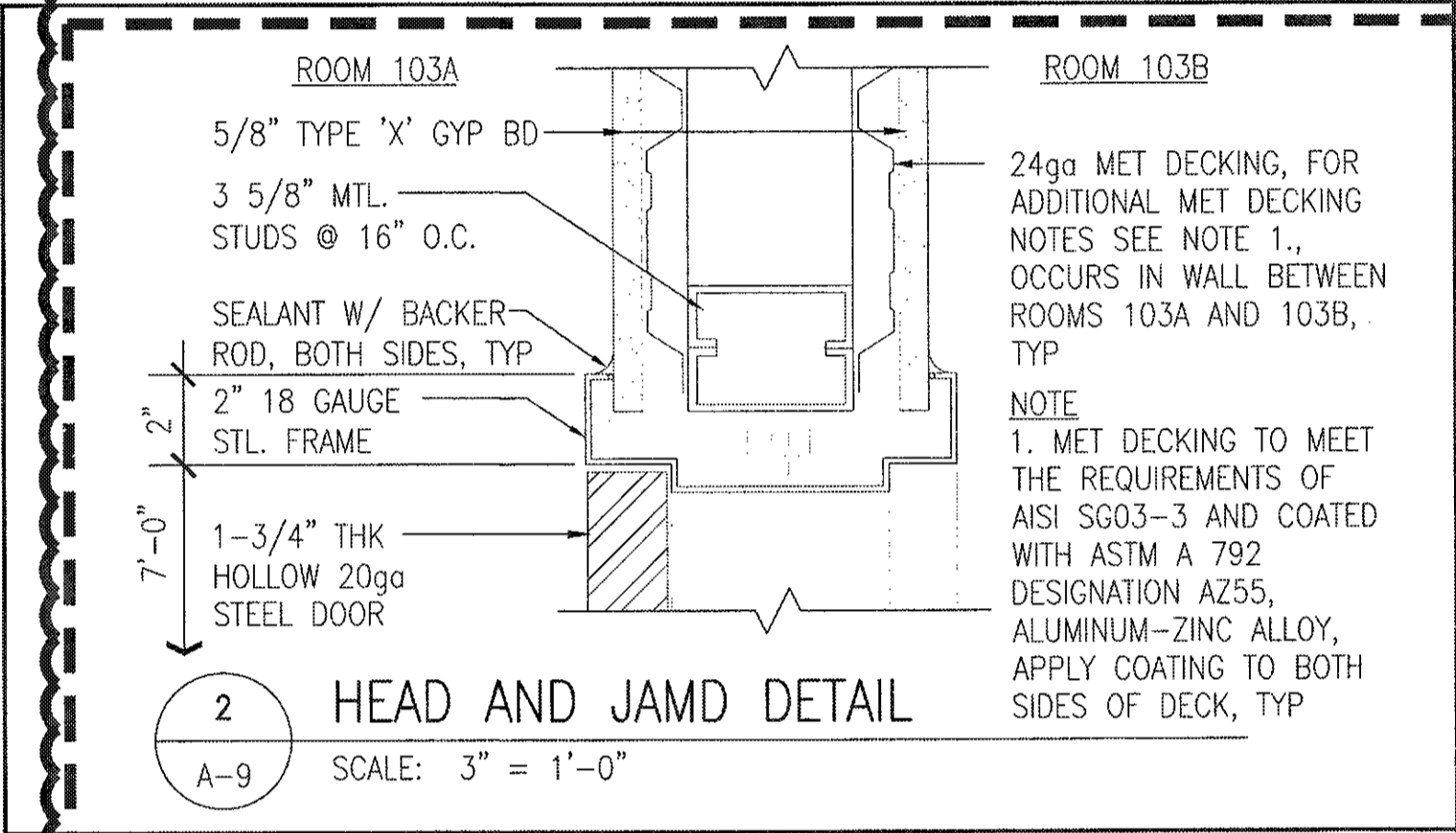
5 EMERGENCY GENERATOR BUILDING SECTION  
SCALE: 3/4" = 1'-0"



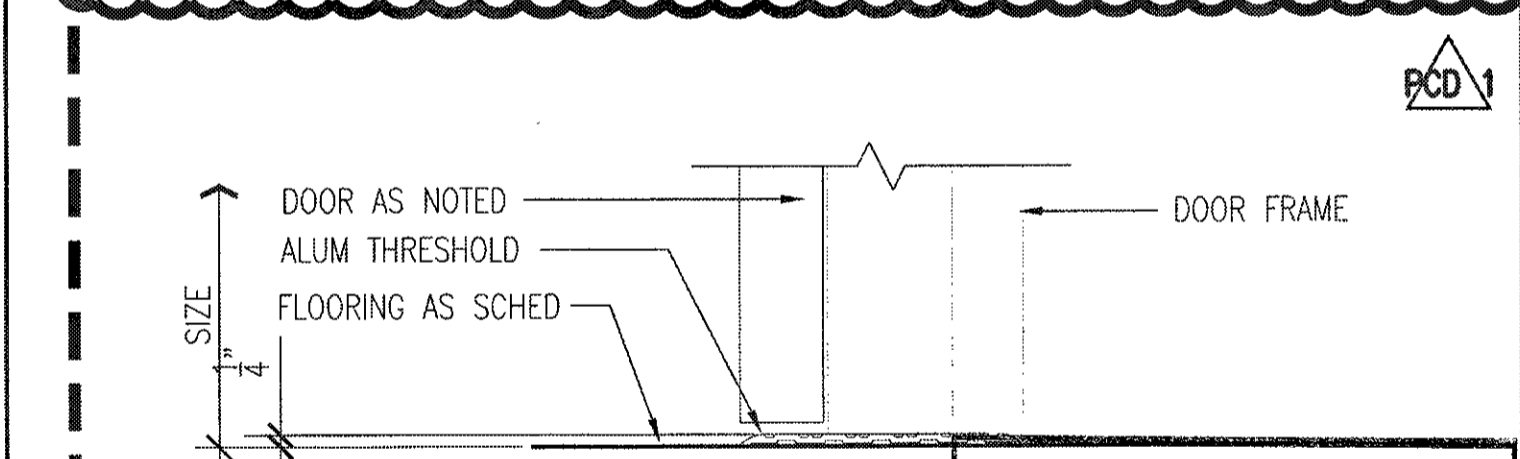
6 HEAD AND JAMB DETAIL  
SCALE: 3" = 1'-0"



8 SILL DETAIL  
SCALE: 3" = 1'-0"



2 HEAD AND JAMB DETAIL  
SCALE: 3" = 1'-0"



3 THRESHOLD DETAIL  
SCALE: 3" = 1'-0"

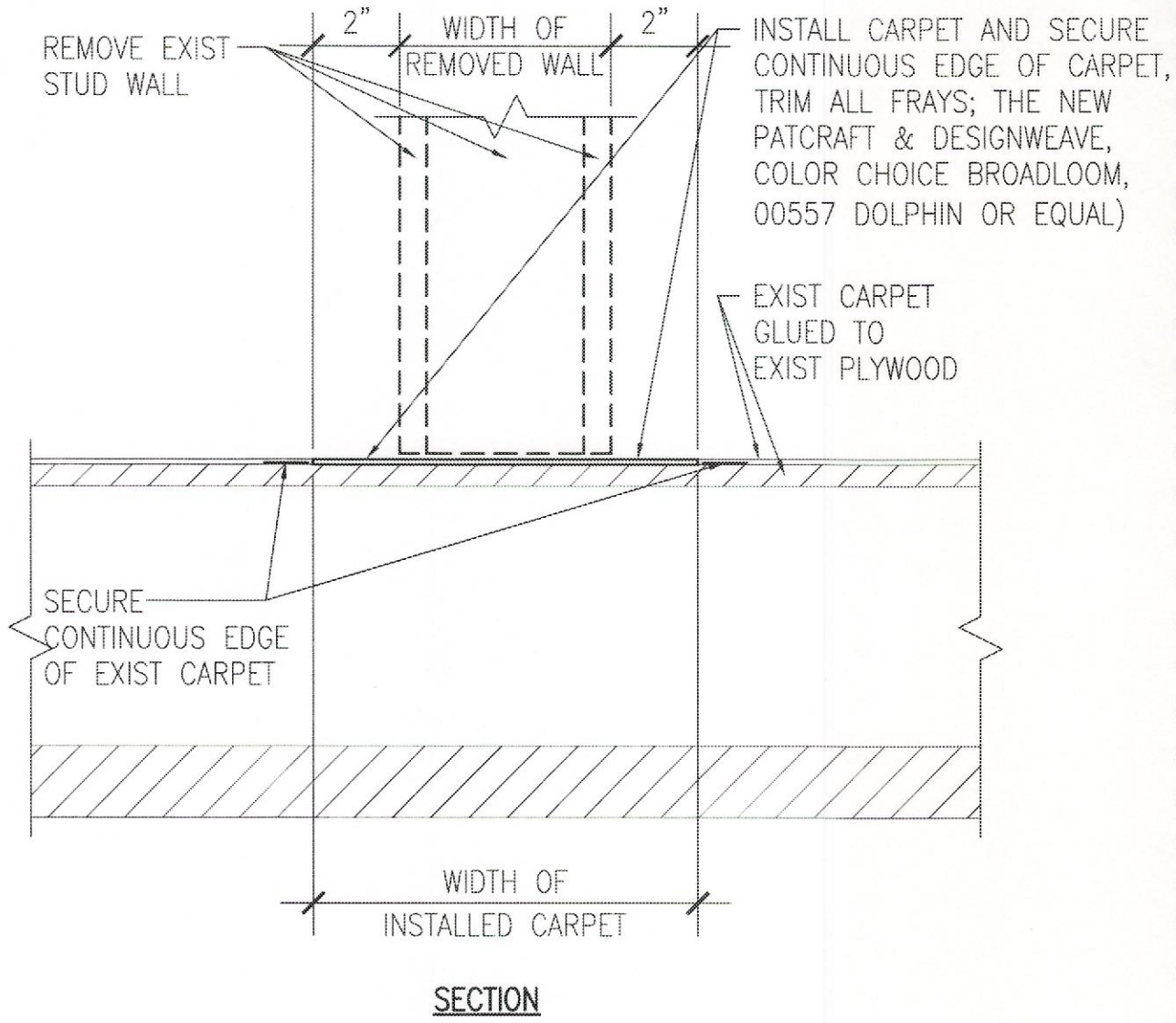
**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul J. ...* DATE: 7/11/14

BID ITEM #1

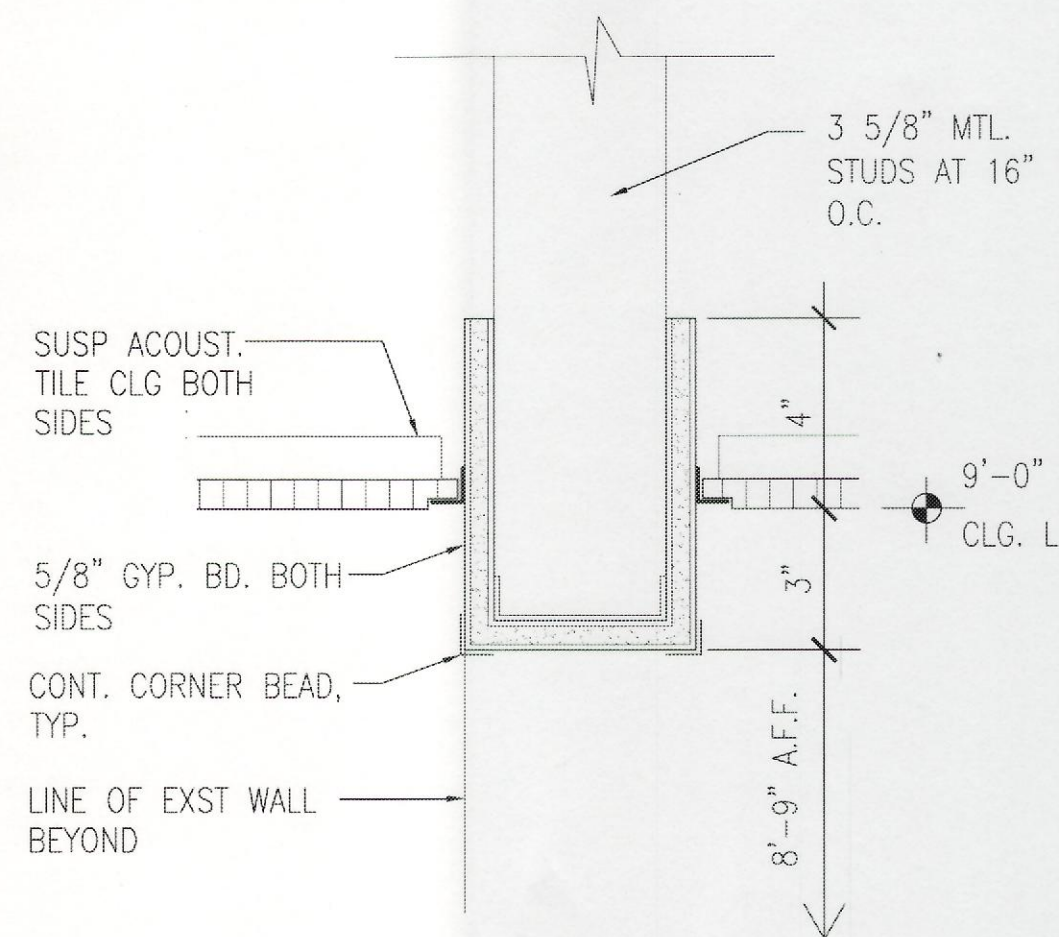
IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY  
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.  
HERBERT S.F. LEONG LICENSED PROFESSIONAL ARCHITECT No. 04080 HAWAII, U.S.A. EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

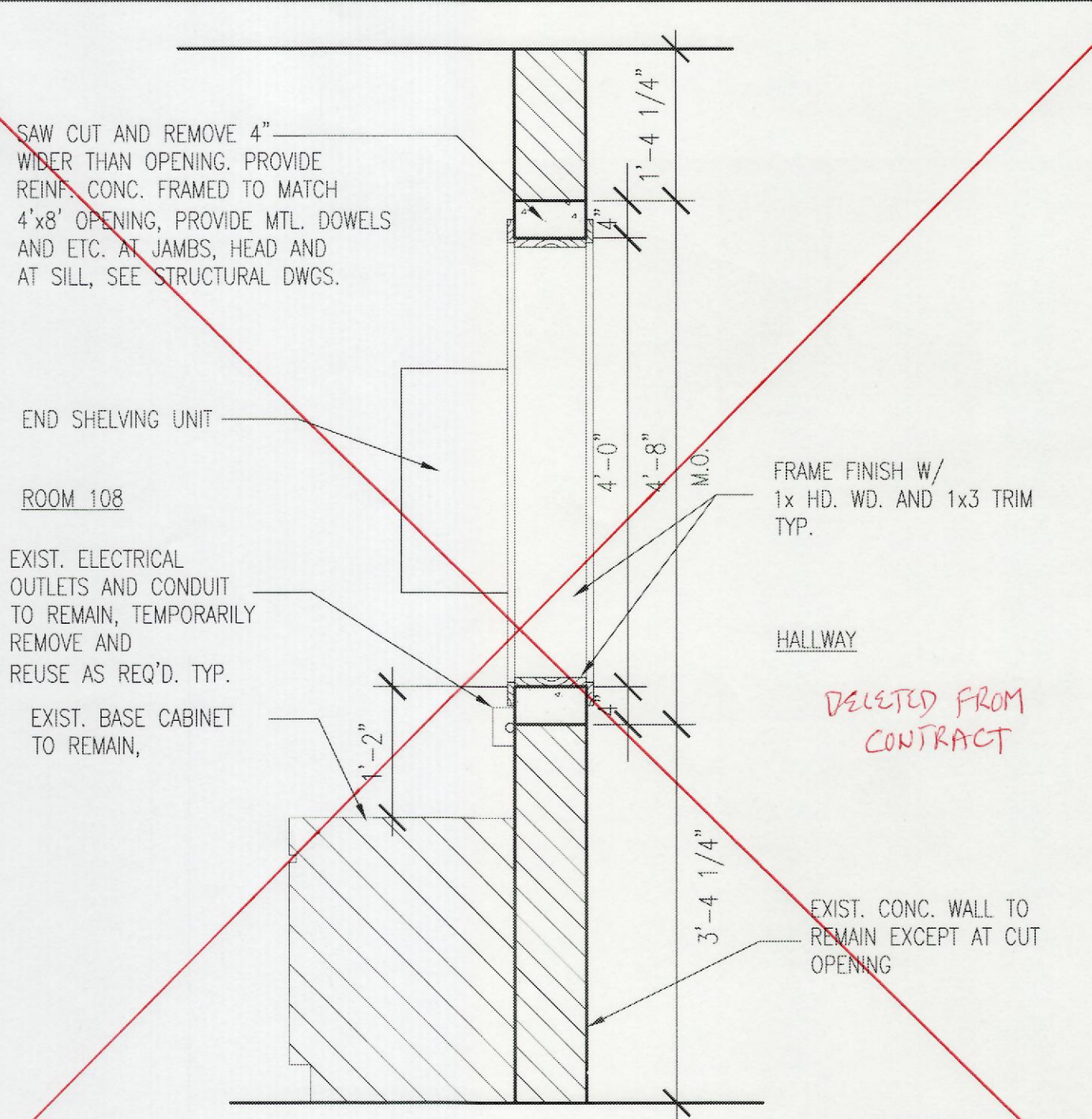
REVISION NO	DESCRIPTION	DATE	BY	CHK'D
PCD 1	PCD NO.1 CHANGE DOOR MATERIAL	03/12/2012		
DESIGNED:	HL	DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII		
DRAWN:	MK, RV	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE		
SAFETY:		EMERGENCY GENERATOR BUILDING SECTION AND DETAILS		
SECURITY:				
APPROVED:		DATE	JAN. 31, 2011	
154 GP / BSE	154 GP / CC	SCALE:		
APPROVED:		DWG #	A-9	
154 GP / CC	154 GP / CC	SHEET	21 of 57	
APPROVED:				
TAC - HAWAII	154 CES / CEP PROJ ENGR			



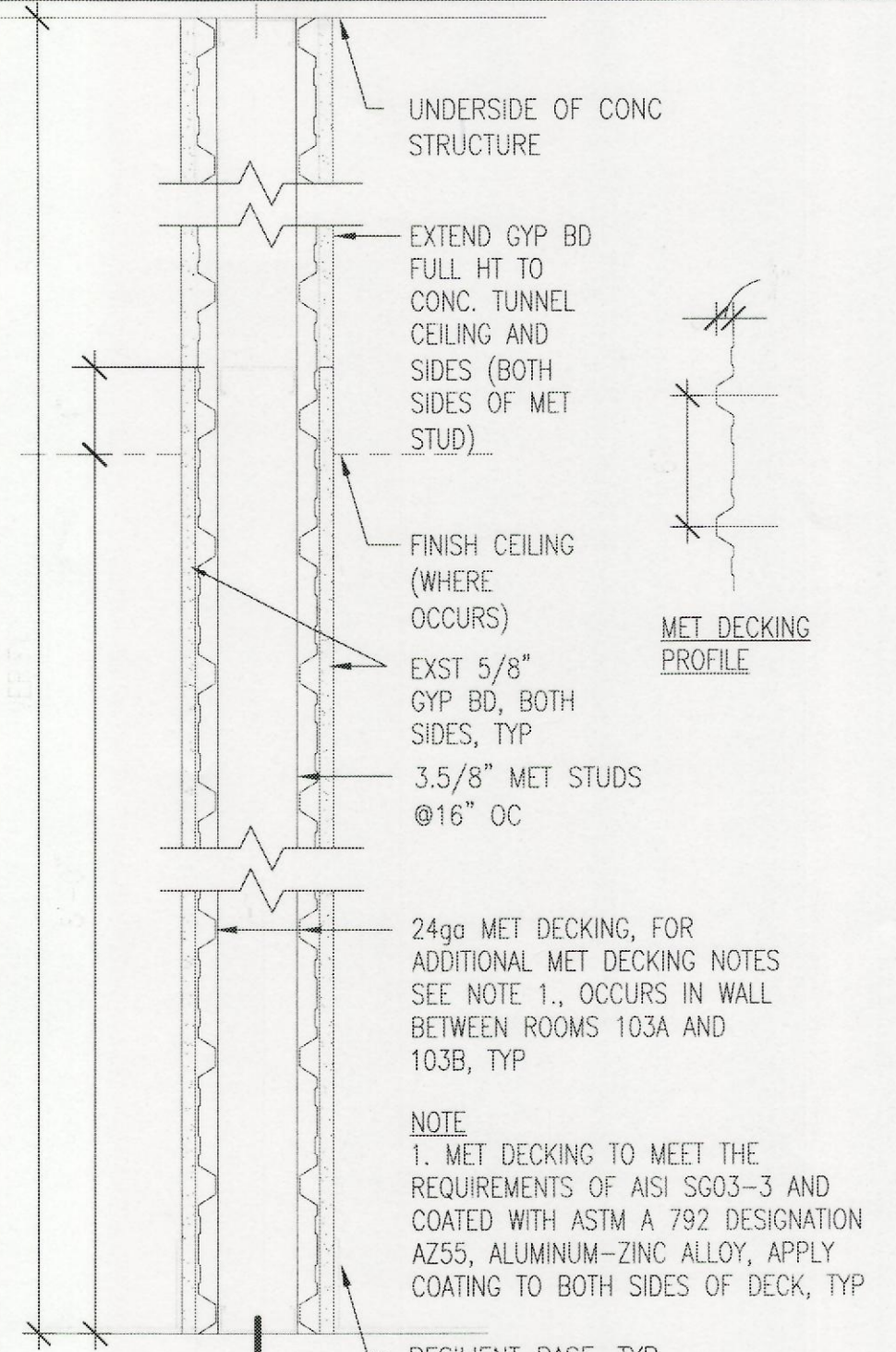
**6 CARPET PATCH @ DEMO WALL**  
SCALE: 3" = 1'-0"



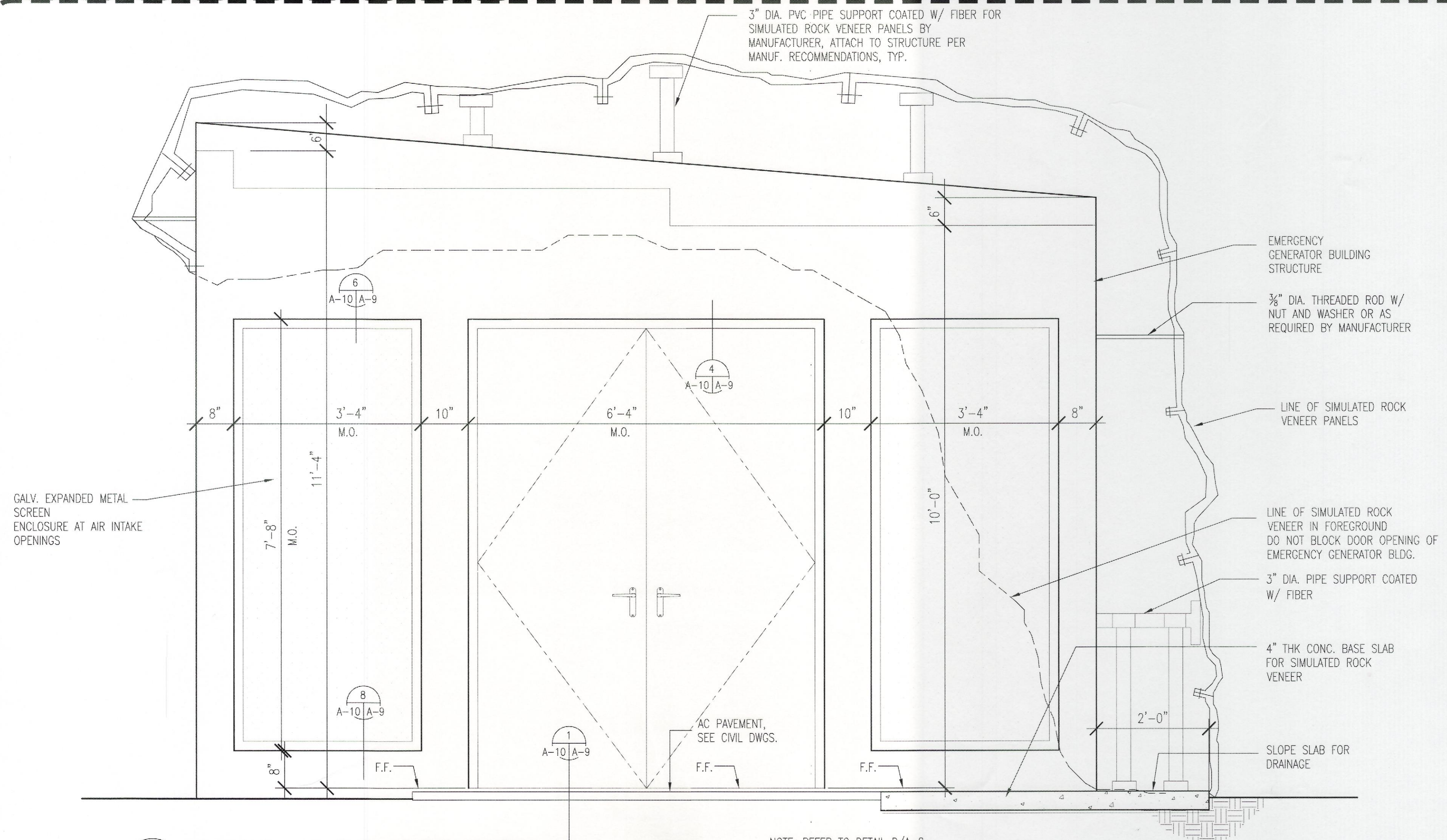
**4 HEADER DETAIL**  
SCALE: 3" = 1'-0"



**2 WALL SECTION AT OPENING - RM. #108**  
SCALE: 3/4" = 1'-0"

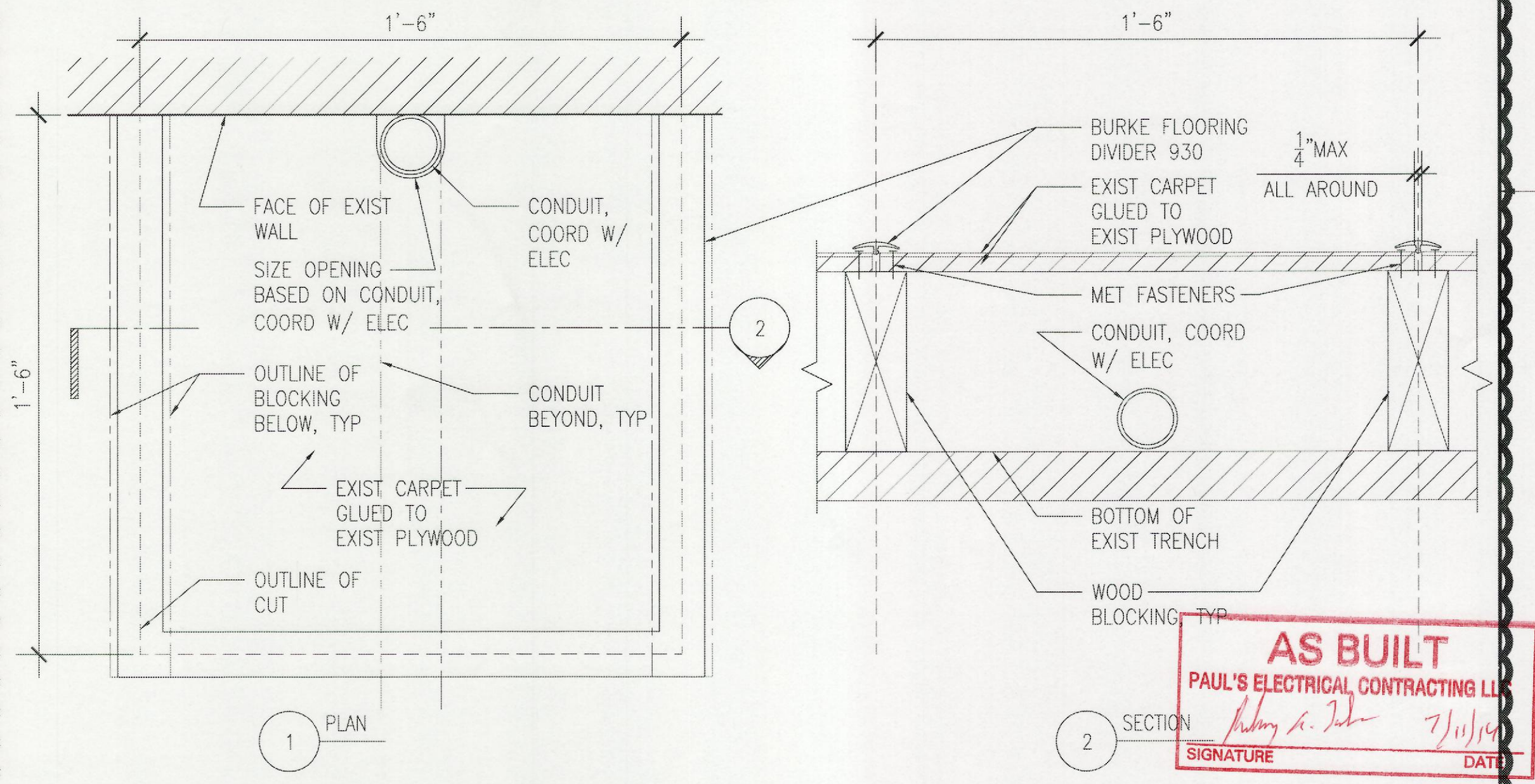


**1 INTERIOR PARTITION DETAIL**  
SCALE: 1 1/2" = 1'-0"



**3 CAMOUFLAGE ENCLOSURE SECTION**  
SCALE: 3/4" = 1'-0"

NOTE: REFER TO DETAIL D/A-8 FOR SUGGESTED PANELIZATION OF SIMULATED ROCK VENEER



**5 ACCESS PANEL**  
SCALE: 3" = 1'-0"

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul S. Paul* DATE: 7/11/14

**BID ITEM #1**

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.**

**HERBERT S.F. LEDING LICENSED PROFESSIONAL ARCHITECT No. 04050 HAWAII, U.S.A.**

EXP. 4/30/14  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

REVISION NO	DESCRIPTION	DATE	BY	CHK'D
PCD 2	PCD NO.2 WALL REMOVAL AND REPAIR	07/27/2012		
PCD 1	PCD NO.1 CHANGE DOOR MATERIAL	03/12/2012		

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

WALL SECTIONS AND DETAILS

DESIGNED: HL	DATE: JAN. 31, 2011
DRAWN: MK, RV	SCALE:
SECURITY:	DWG # A-10
APPROVED: 154 GP / BZE	APPROVED: 154 CES / CEC PROJ ENR
APPROVED: 154 GP / CC	SHEET 22 of 57

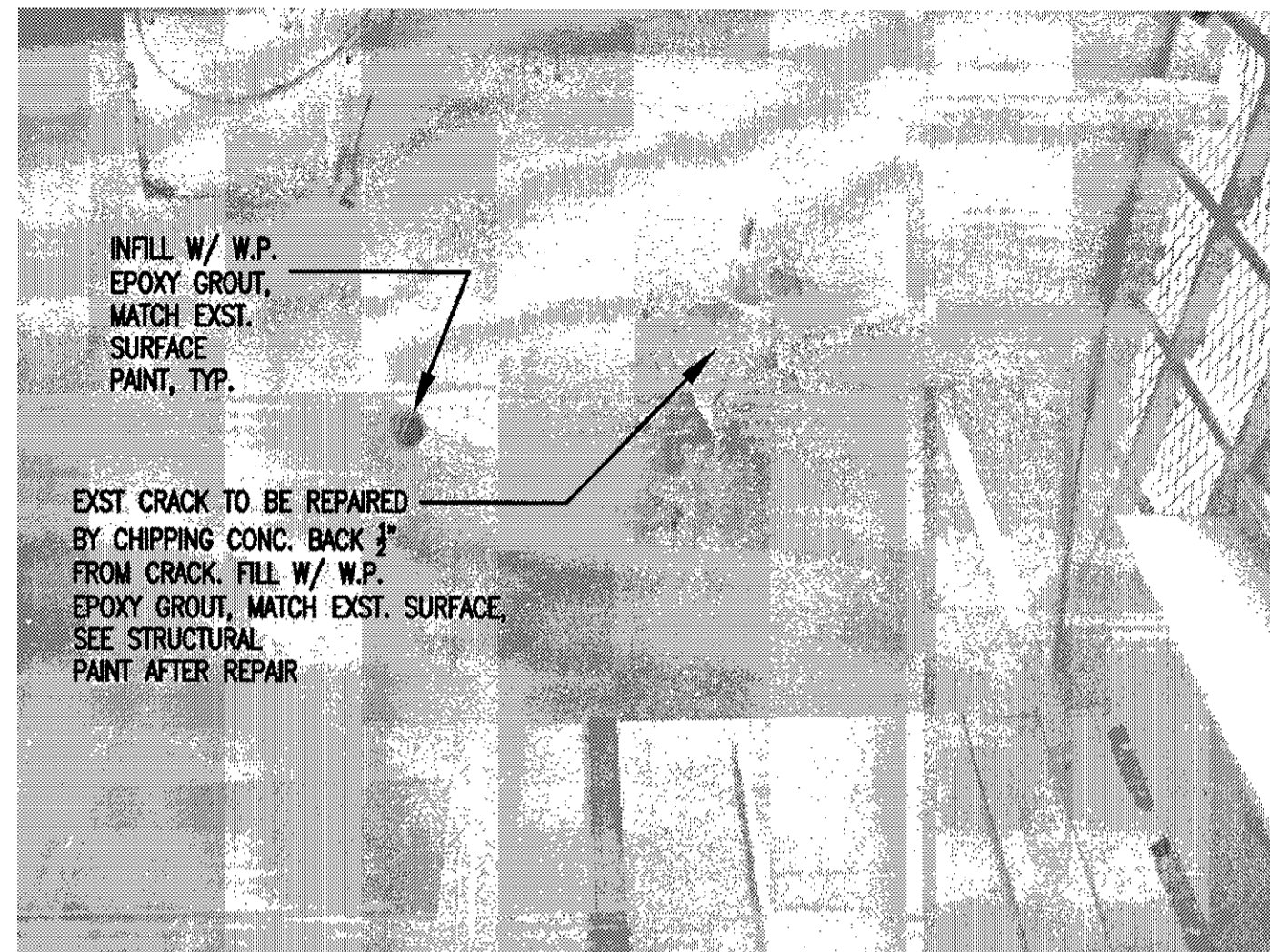


PHOTO NO. 4 AT ANTEROOM TUNNEL CEILING  
N.T.S.

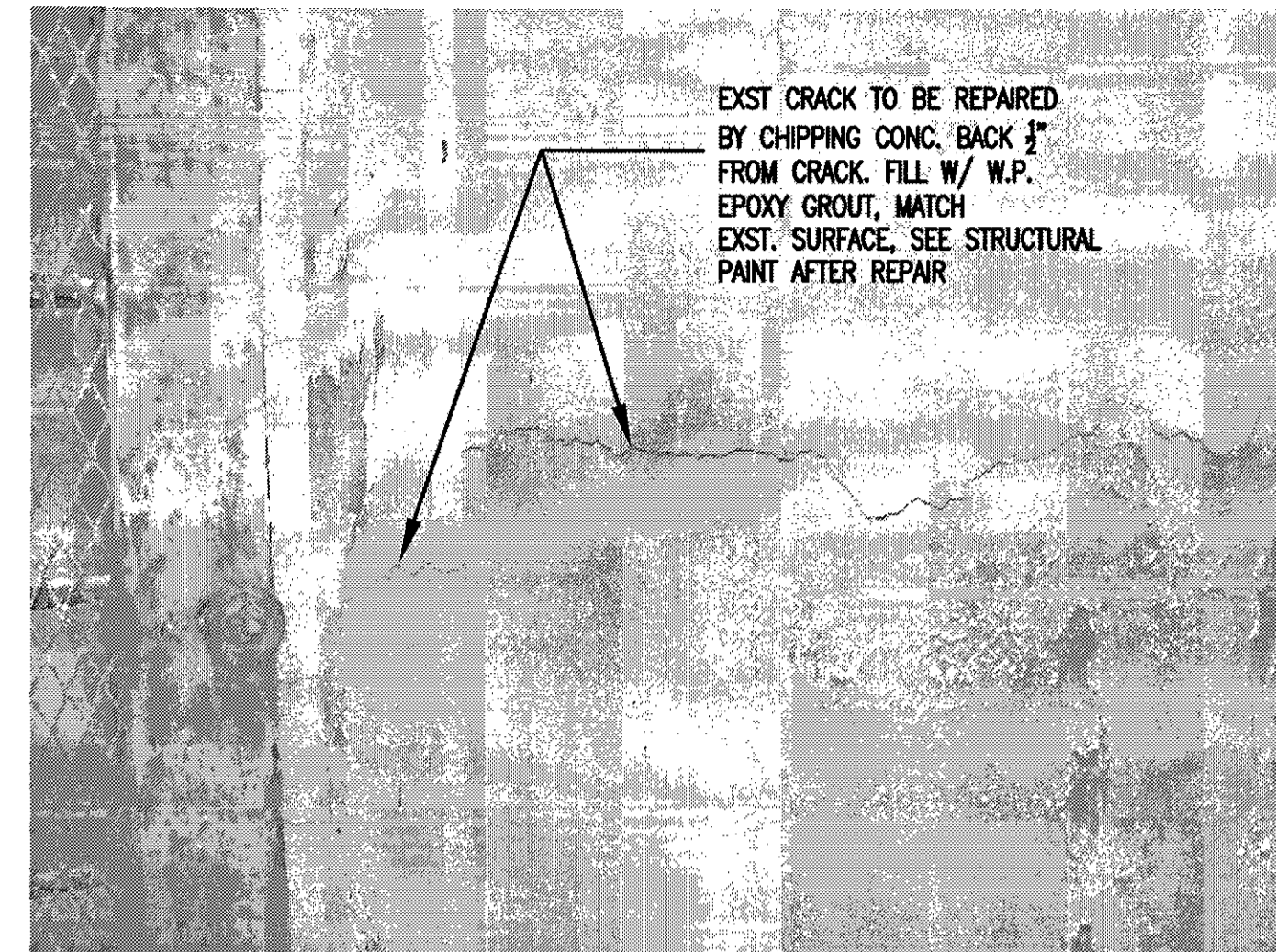


PHOTO NO. 1 AT EXTERIOR JAMB  
N.T.S.

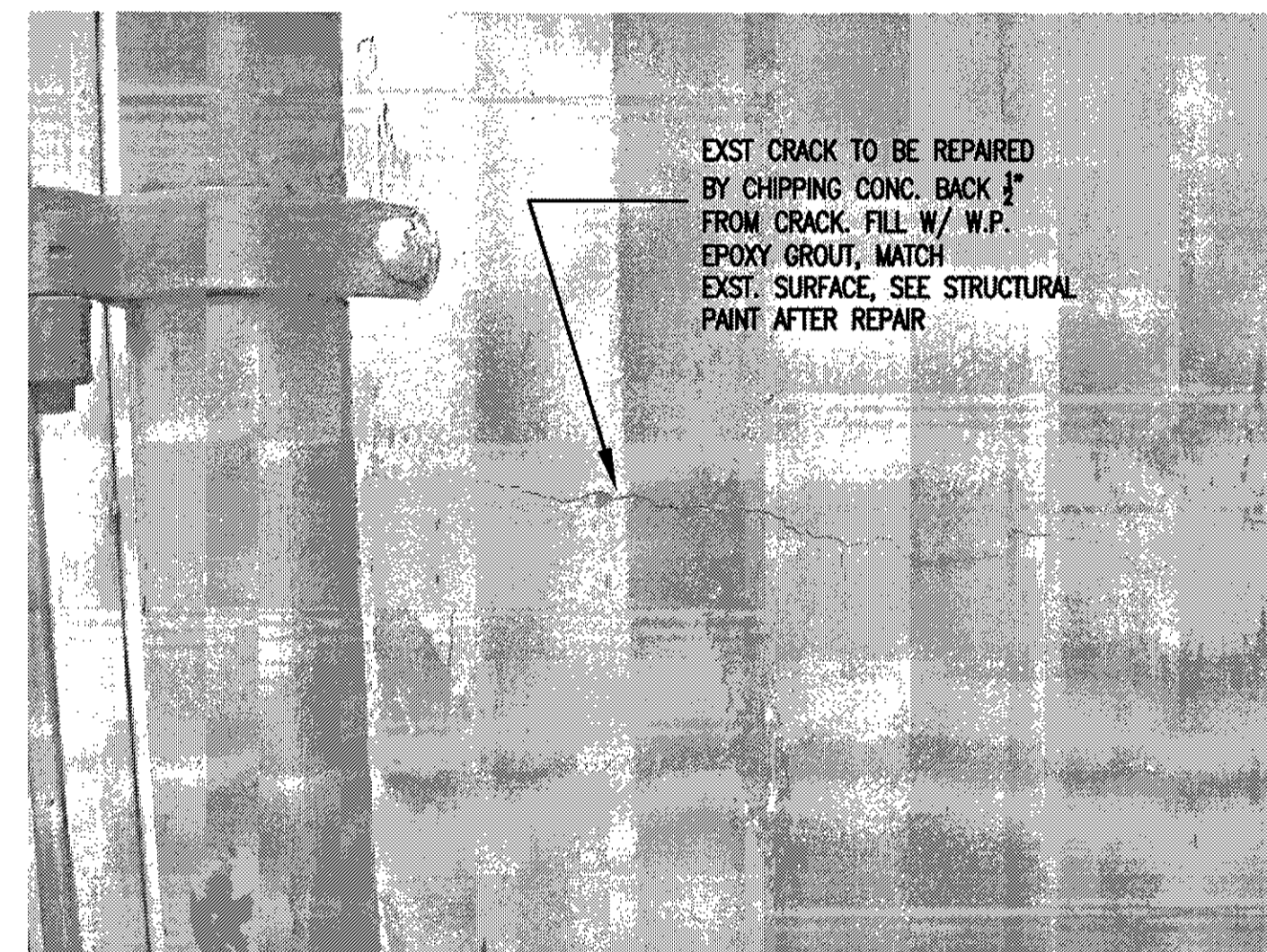


PHOTO NO. 2 AT EXTERIOR JAMB  
N.T.S.

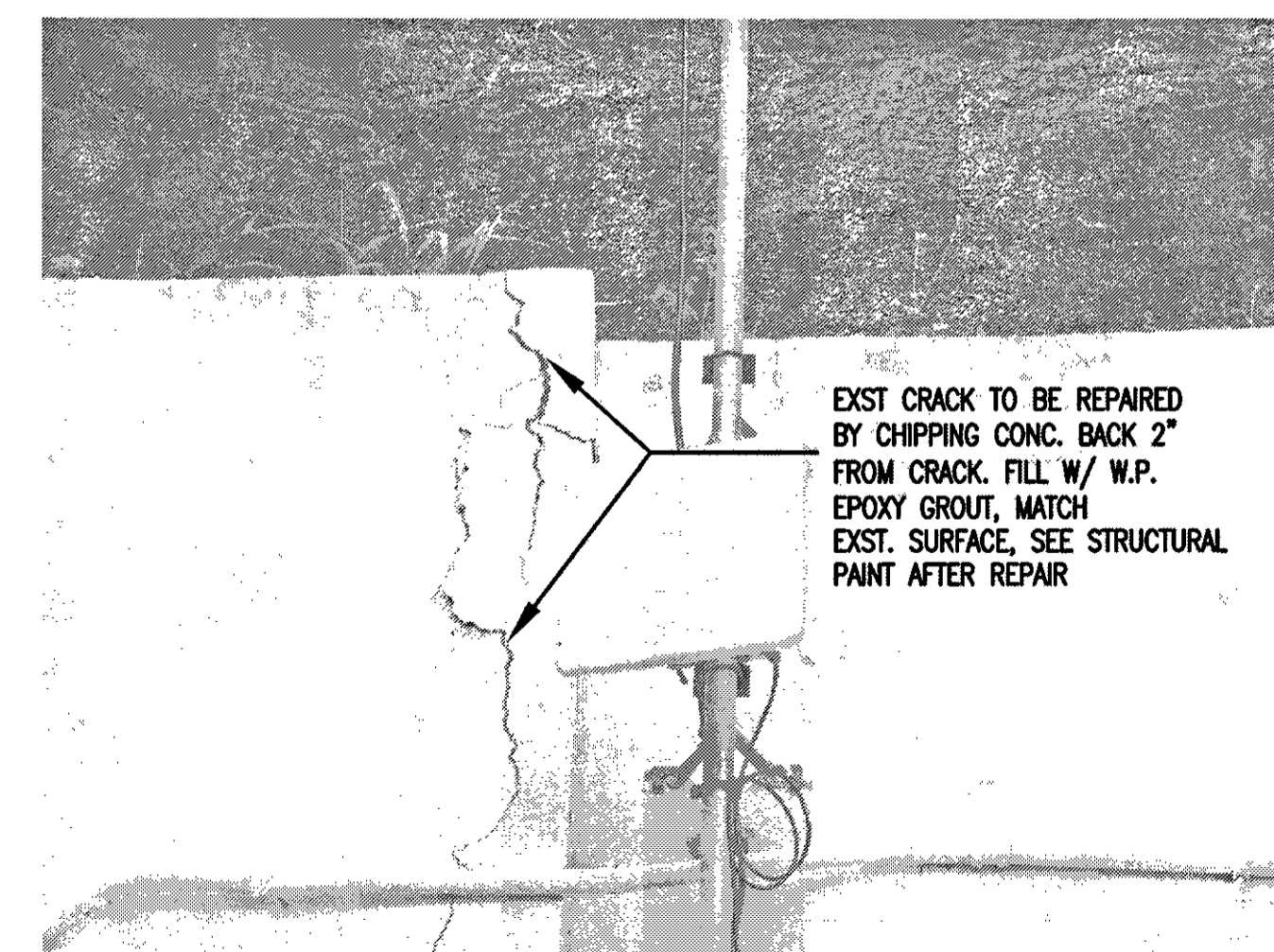


PHOTO NO. 3 AT EXTERIOR TOP  
N.T.S.

PHOTO NO. 3 AT EXTERIOR TOP

PHOTO NO. 2 AT EXTERIOR JAMB

PHOTO NO. 4 AT ANTEROOM TUNNEL CEILING BEYOND

REPAINT ENTIRE ENTRANCE FACADE (BOTH SIDES)

PHOTO NO. 1 AT EXTERIOR JAMB BEHIND DOOR

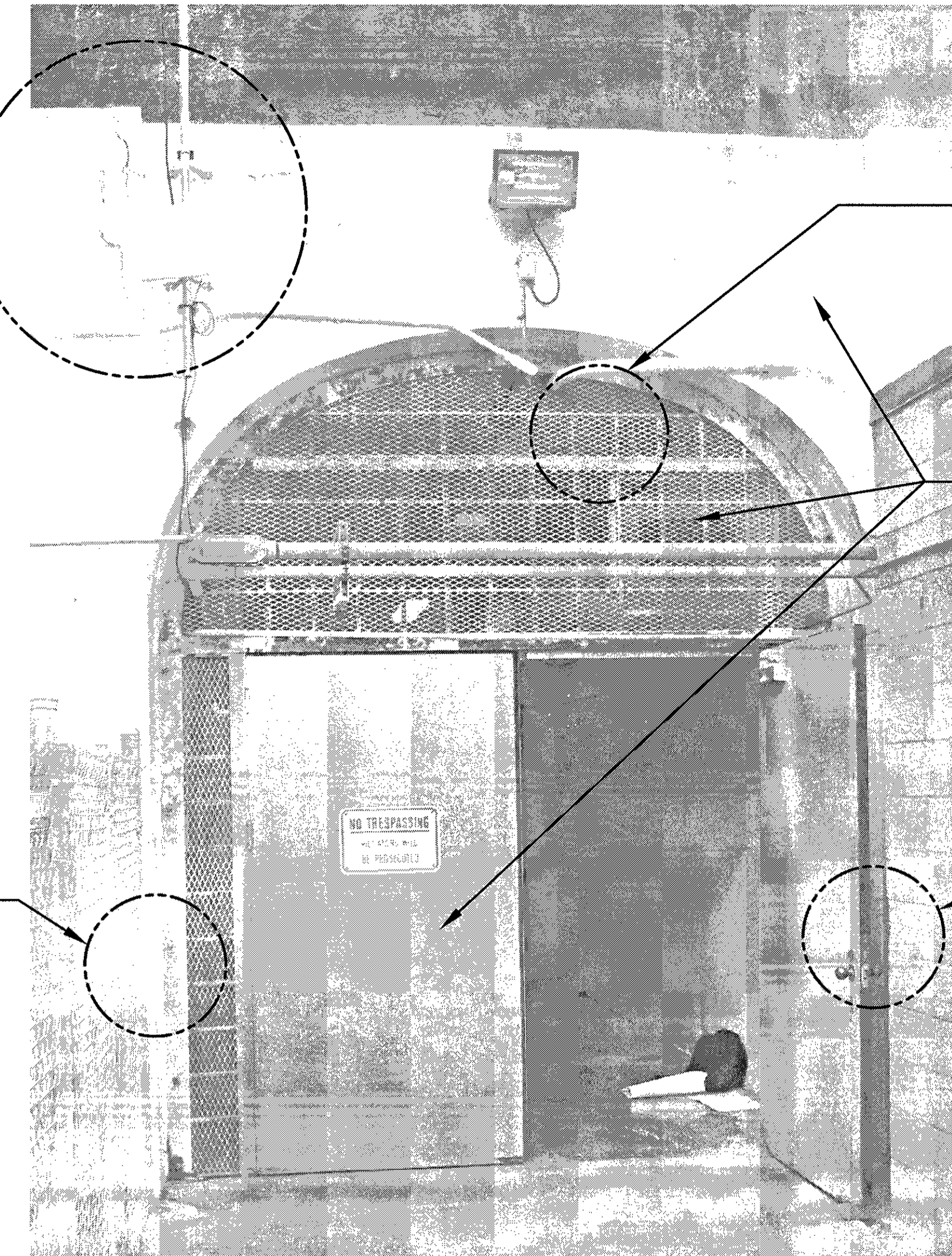


PHOTO AT TUNNEL 1 ENTRANCE  
N.T.S.

NOTES:

1. THESE PHOTOS REPRESENT GENERALLY THE VARIOUS TYPES OF EXISTING CONDITIONS. IT IS NOT INTENDED TO LIMIT SCOPE OF WORK TO THESE LOCATIONS SHOWN BY PHOTOS.
2. PAINT ALL WALLS AND CEILING OF ANTEROOM INCLUDING DOORS, PANELS, CONDUITS, PIPES AND ETC. UNLESS NOTED OTHERWISE
3. THIS IS A HISTORICAL FACILITY. ANY AND ALL BULLET HOLES ARE NOT TO BE TOUCHED AND SHALL REMAIN

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT—SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

HERRBERT S.F. LEONG  
LICENSED PROFESSIONAL ARCHITECT  
No. 04050  
HAWAII, U.S.A.

EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

AS BUILT  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul's Electrical* DATE: 7/11/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

DESIGNED: HL  
DRAWN: MK, RV  
SAFETY:  
SECURITY:

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE  
MAIN TUNNEL ENTRANCE PHOTO DUMPLS

APPROVED: 154 GP / BCE	APPROVED: 154 GP / CC	DATE: JAN. 31, 2011
APPROVED:	APPROVED:	SCALE:
DWG / CC	DWG / CC	DWG #
APPROVED:	APPROVED:	SHEET 23 of 57
TAG - HAWAII	154 CES / CEC PROJ ENGR	

A-11

**GENERAL:**

- A. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE BUILDING CODE AS STATED BELOW. HOWEVER, WHERE REFERENCE IS MADE TO PERFORMANCE CONFORMING TO OTHER STANDARDS THE MORE STRINGENT SHALL APPLY.
  - 1. CITY AND COUNTY OF HONOLULU: AMENDED IBC, 2003
- B. THE CONTRACTOR SHALL COMPARE ALL THE CONTRACT DOCUMENTS WITH EACH OTHER AND REPORT IN WRITING TO THE ARCHITECT ALL INCONSISTENCIES AND OMISSIONS.
- C. THE CONTRACTOR SHALL TAKE FIELD MEASUREMENTS AND VERIFY FIELD CONDITIONS AND SHALL COMPARE SUCH FIELD MEASUREMENTS AND CONDITIONS WITH THE DRAWINGS BEFORE COMMENCING WORK. REPORT IN WRITING TO THE ARCHITECT ALL INCONSISTENCIES AND OMISSIONS.
- D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES.
- E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR METHODS OF CONSTRUCTION, WORKMANSHIP AND JOB SAFETY. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND BRACING AS REQUIRED FOR STABILITY OF STRUCTURAL MEMBERS AND SYSTEMS.
- F. CONSTRUCTION LOADING SHALL NOT EXCEED DESIGN LIVE LOAD UNLESS SPECIAL SHORING IS PROVIDED. ALLOWABLE LOADS SHALL BE REDUCED IN AREAS WHERE THE STRUCTURE HAS NOT ATTAINED FULL DESIGN STRENGTH.
- G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE ADJACENT PROPERTIES, STRUCTURES, STREETS AND UTILITIES DURING THE CONSTRUCTION PERIOD.
- H. DETAILS NOTED AS TYPICAL ON THE STRUCTURAL DRAWINGS SHALL APPLY IN ALL CONDITIONS UNLESS SPECIFICALLY SHOWN OR NOTED.

**DESIGN CRITERIA:**

- A. ROOF LIVE LOAD: 20 PSF
- B. WIND DESIGN DATA
  - 1. BASIC WIND SPEED: 105 MPH
  - 2. IMPORTANCE FACTOR: 1.15
  - 3. EXPOSURE CATEGORY: B
  - 4. BUILDING ENCLOSURE CLASSIFICATION: ENCLOSED
- C. EARTHQUAKE DESIGN DATA:
  - 1. IMPORTANCE FACTOR: 1.5
  - 2. MAPPED SPECTRAL RESPONSE ACCELERATIONS
    - a. SHORT PERIOD: 0.61g
    - b. 1-SEC PERIOD: 0.178g
  - 3. SITE CLASS: D
  - 4. SPECTRAL RESPONSE COEFFICIENTS
    - a. SHORT PERIOD: 0.53
    - b. 1-SEC PERIOD: 0.249
  - 5. DESIGN CATEGORY: D
  - 6. BASIC SEISMIC-FORCE-RESISTING SYSTEM: CMU BEARING WALLS
  - 7. DESIGN BASE SHEAR: 21.8 kips
  - 8. SEISMIC RESPONSE COEFFICIENT: 0.32
  - 9. RESPONSE MODIFICATION FACTOR: 2.5
  - 10. ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE
- D. SPECIAL LOADS
  - 1. ROCK VENEER SYSTEM: 30 PSF
- E. SOILS
  - 1. SITE CLASS: D
  - 2. ALLOWABLE BEARING CAPACITY: 3,000 PSF
  - 3. COEFFICIENT OF FRICTION: 0.4

**SPECIAL INSPECTIONS:**

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT SPECIAL INSPECTION OF PORTIONS OF THE WORK AS REQUIRED BY THE BUILDING CODE IS MADE AT THE APPROPRIATE TIME. THE CONTRACTOR SHALL GIVE TIMELY NOTICE OF WHEN AND WHERE INSPECTIONS ARE TO BE MADE AND PROVIDE ACCESS FOR THE INSPECTOR. THE CONTRACTOR SHALL CORRECT DEFECTIVE WORK AT NO ADDITIONAL COST TO THE OWNER AND PAY FOR RE-INSPECTION.
- B. THE FOLLOWING TYPE OF WORK LISTED UNDER IBC 2003, SECTION 1704 REQUIRES SPECIAL INSPECTION:
  - 1. CONCRETE CONSTRUCTION (TABLE 1704.4).
  - 2. MASONRY CONSTRUCTION, NONESSENTIAL FACILITIES (TABLE 1704.5.1).

**FOUNDATION:**

- A. FOUNDATION DESIGN IS BASED ON THE FOLLOWING GEOTECHNICAL INVESTIGATION REPORT.
  - 1. "GEOTECHNICAL ENGINEERING EXPLORATION ELECTRICAL UPGRADE FOR BATTERY 407 TUNNEL, HIARNG, DIAMOND HEAD CRATER, OAHU, HAWAII" DATED JUNE 21, 2010.
- B. CONTRACTOR SHALL PROVIDE FOR DE-WATERING OF EXCAVATION FROM SURFACE WATER, GROUND WATER OR SEEPAGE.
- C. FOOTINGS SHALL BEAR ON UNDISTURBED IN-SITU FIRM SOILS. BOTTOM OF FOOTINGS SHALL BE COMPACTED TO PROVIDE A RELATIVELY FIRM AND SMOOTH BEARING SURFACE PRIOR TO PLACEMENT OF REINFORCING STEEL AND CONCRETE. IF SOFT AND/OR LOOSE MATERIALS ARE ENCOUNTERED AT THE BOTTOM OF FOOTING EXCAVATIONS, THEY SHALL BE OVER-EXCAVATED TO EXPOSE THE UNDERLYING FIRM MATERIALS. THE OVER-EXCAVATION SHALL BE BACKFILLED WITH SELECT GRANULAR MATERIAL COMPACTED TO A MINIMUM OF 95% RELATIVE COMPACTION OR THE FOOTING BOTTOM MAY BE EXTENDED DOWN TO THE UNDERLYING COMPETENT MATERIAL.
- D. UNLESS NOTED OTHERWISE, THE MINIMUM DEPTH OF FOOTINGS BELOW THE UNDISTURBED GROUND SURFACE SHALL BE 12 INCHES.
- E. EXCAVATIONS FOR FOUNDATIONS SHALL BE MONITORED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF CONCRETE AND REINFORCING STEEL TO CONFIRM FOUNDATION BEARING CONDITIONS AND REQUIRED EMBEDMENT DEPTHS. GEOTECHNICAL ENGINEER SHALL SUBMIT LETTER OF COMPLIANCE TO THE ARCHITECT.
- F. CONTRACTOR SHALL BRACE OR PROTECT ALL WALLS BELOW GRADE FROM LATERAL LOADS UNTIL ATTACHING FLOORS ARE COMPLETELY IN PLACE AND HAVE ATTAINED THEIR FULL DESIGN STRENGTH.

**CONCRETE:**

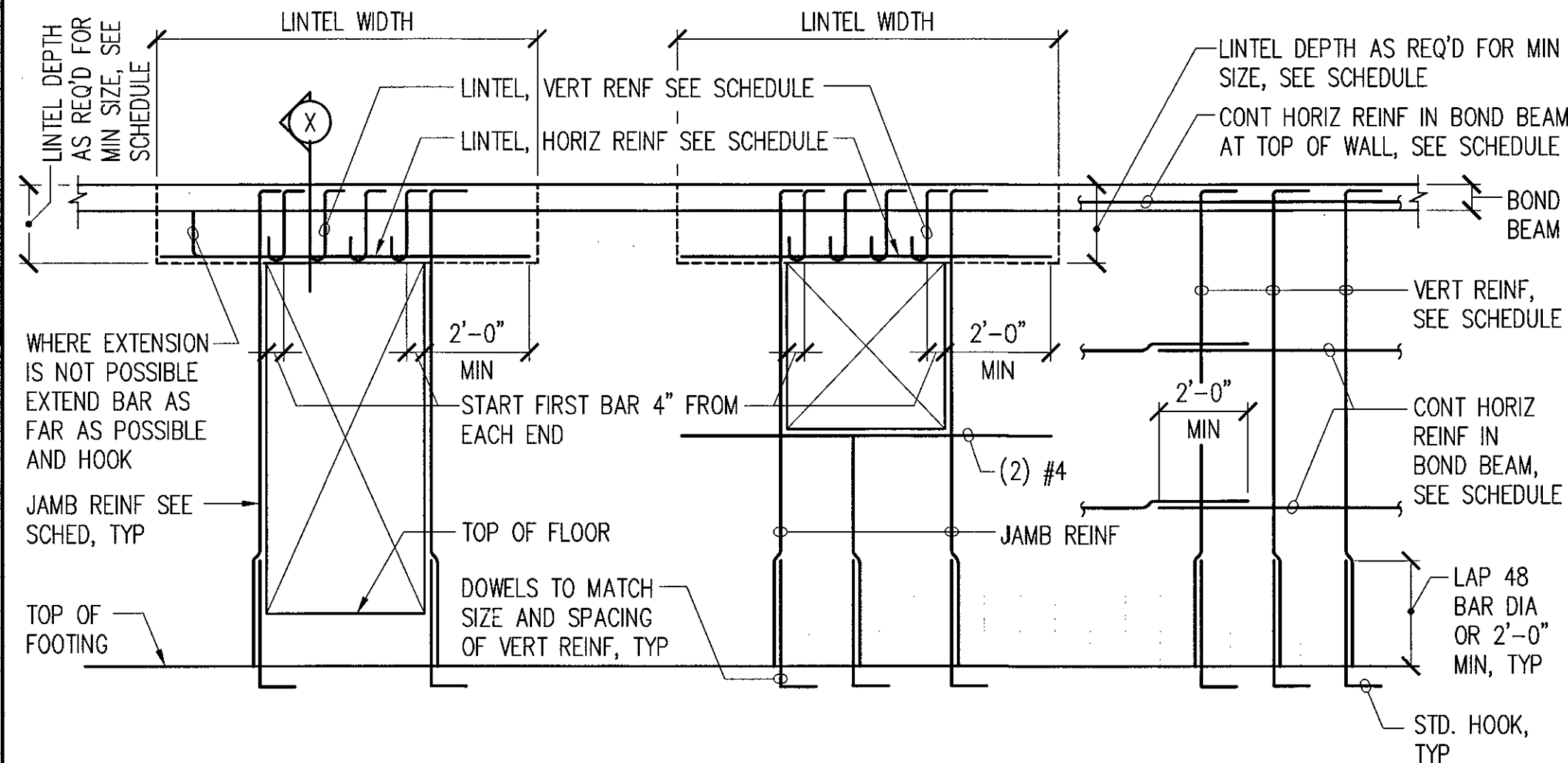
- A. CONCRETE CONSTRUCTION SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE ACI 318
- B. CONCRETE SHALL BE REGULAR WEIGHT HARD ROCK CONCRETE AND SHALL HAVE THE MINIMUM 28 DAY COMPRESSIVE STRENGTHS OF 3,000 PSI:
- C. CONCRETE DELIVERY TICKETS SHALL RECORD ALL FREE WATER IN THE MIX: AT BATCHING BY PLANT, FOR CONSISTENCY BY DRIVER, AND ANY ADDITIONAL REQUEST BY CONTRACTOR IF PERMITTED BY THE MIX DESIGN.
- D. ALL INSERTS, ANCHOR BOLTS, PLATES, AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE HOT-DIPPED GALVANIZED ACCORDING TO ASTM A153 UNLESS OTHERWISE NOTED.
- E. REINFORCING BARS, ANCHOR BOLTS, INSERTS, AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE SECURED IN POSITION PRIOR TO PLACEMENT OF CONCRETE.
- F. CONDUITS, PIPES, AND SLEEVES PASSING THROUGH A SLAB OR FOOTING AND NOT CONFORMING TO TYPICAL DETAILS SHALL BE LOCATED AND SUBMITTED TO THE ARCHITECT FOR APPROVAL.
- G. THE CONTRACTOR SHALL LOCATE CONSTRUCTION JOINTS SO AS NOT TO IMPAIR THE STRENGTH OF THE STRUCTURE AND TO MINIMIZE SHRINKAGE STRESSES. SUBMIT LOCATION OF CONSTRUCTION JOINTS TO THE ARCHITECT FOR APPROVAL, UNLESS OTHERWISE NOTED.
- H. SEE ARCHITECTURAL DRAWINGS FOR CHAMFERS, EDGE RADI, DRIPS, REGLETS, FINISHES AND OTHER NON-STRUCTURAL ITEMS NOT SHOWN OR SPECIFIED ON THE STRUCTURAL DRAWINGS.
- I. LEAVE FORMWORK FOR BEAM SOFFITS, JOISTS, SLABS, AND OTHER STRUCTURAL ELEMENTS THAT SUPPORT WEIGHT OF CONCRETE IN PLACE UNTIL CONCRETE HAS ACHIEVED ITS 28 DAY DESIGN COMPRESSIVE STRENGTH.

**REINFORCING STEEL:**

- A. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
- B. WELDED REINFORCING STEEL SHALL BE LOW-ALLOY DEFORMED BARS CONFORMING TO ASTM A706.
- C. WELDED WIRE REINFORCEMENT SHALL BE GALVANIZED CONFORMING TO ASTM A185.
- D. CLEAR CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
  - 1. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
  - 2. CONCRETE FORMED AND EXPOSED TO EARTH OR WEATHER:
    - a. NO. 6 THROUGH NO. 18 BAR: 2"
    - b. NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER: 1.5"
  - 3. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
    - a. SLABS, WALLS, JOISTS:
      - i. NO. 14 AND NO. 18 BAR: 1.5"
      - ii. NO. 11 BAR AND SMALLER: 0.75"
    - b. BEAMS, COLUMNS:
      - i. PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS: 1.5"
      - ii. NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER: 0.75"
      - iii. NO. 6 BAR AND LARGER: 0.5"
    - c. SHELLS, FOLDED PLATE MEMBERS:
      - i. NO. 6 BAR AND LARGER: 0.75"
      - ii. NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER: 0.5"
- E. CLEAR DISTANCE BETWEEN THE SURFACE OF A BAR AND ANY SURFACE OF A MASONRY UNIT SHALL BE NOT LESS THAN 1/2 INCH, UNLESS OTHERWISE NOTED.
- F. REINFORCING STEEL SHALL BE SPLICED WHERE INDICATED ON PLANS. PROVIDE LAP SPLICE LENGTH PER TYPICAL DETAILS AND SCHEDULE, UNLESS OTHERWISE NOTED.
- G. LAP EDGES AND ENDS OF ADJOINING SHEETS OF WELDED WIRE REINFORCEMENT AT LEAST ONE MESH SPACING. OFFSET LAPS OF ADJOINING SHEET WIDTHS TO PREVENT CONTINUOUS LAPS IN EITHER DIRECTION.
- H. STANDARD HOOKS ON REINFORCING BARS USED SHALL COMPLY WITH ACI 318, SECTION 7.1.

**MASONRY:**

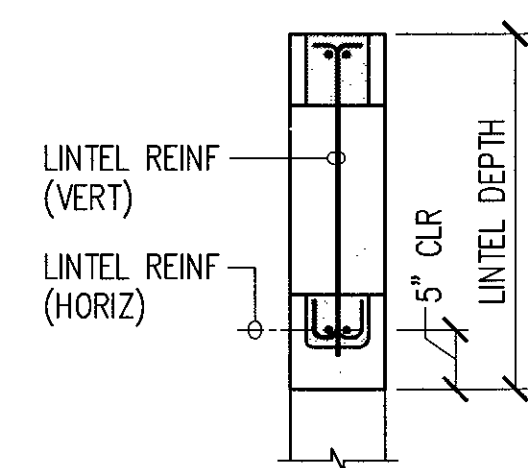
- A. CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C 90 FOR LOAD-BEARING CONCRETE MASONRY UNITS NORMAL WEIGHT WITH A UNIT COMPRESSIVE STRENGTH OF 1,900 PSI
- B. MORTAR FOR USE IN MASONRY CONSTRUCTION SHALL CONFORM TO ASTM C 270 WITH A MINIMUM COMPRESSIVE STRENGTH OF 1,800 PSI. UNUSED MORTAR SHALL BE DISCARDED WITHIN 2 1/2 HOURS AFTER INITIAL MIXING. MORTAR FOR MASONRY SHALL TYPE S.
- C. GROUT SHALL CONFORM TO ASTM C 476 WITH A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI AT 28 DAYS.
- D. ALL CELLS AND BOND COURSES WITH REINFORCEMENT AND INSERTS SHALL BE SOLID GROUTED. CLEANOUTS SHALL BE PROVIDED FOR ALL GROUT POURS OVER 5'-4" IN HEIGHT.
- E. WHEN GROUTING IS STOPPED FOR ONE HOUR OR LONGER, HORIZONTAL CONSTRUCTION JOINTS SHALL BE FORMED BY STOPPING THE GROUT POUR 1 1/2 INCHES BELOW THE TOP OF THE UPPERMOST UNIT.
- F. THE CONTRACTOR SHALL LOCATE CONSTRUCTION JOINTS SO AS NOT TO IMPAIR THE STRENGTH OF THE STRUCTURE AND TO MINIMIZE SHRINKAGE STRESSES. SUBMIT LOCATION OF CONSTRUCTION JOINTS TO THE ARCHITECT FOR APPROVAL, UNLESS OTHERWISE NOTED. WALLS SHALL BE CONSTRUCTED IN CONVENTIONAL RUNNING BOND, UNLESS OTHERWISE NOTED.
- G. SEE ARCHITECTURAL DRAWINGS FOR LAYING PATTERN, HEIGHT OF UNITS, SURFACE TEXTURE, AND JOINT TYPE.
- H. OPEN-ENDED BLOCKS MAY BE SUBSTITUTED FOR STANDARD CONCRETE MASONRY UNITS.
- I. FABRICATOR SHALL BE A PCI CERTIFIED PLANT.



**1 TYPICAL CMU WALL ELEVATION DETAIL**

S-1 NOT TO SCALE

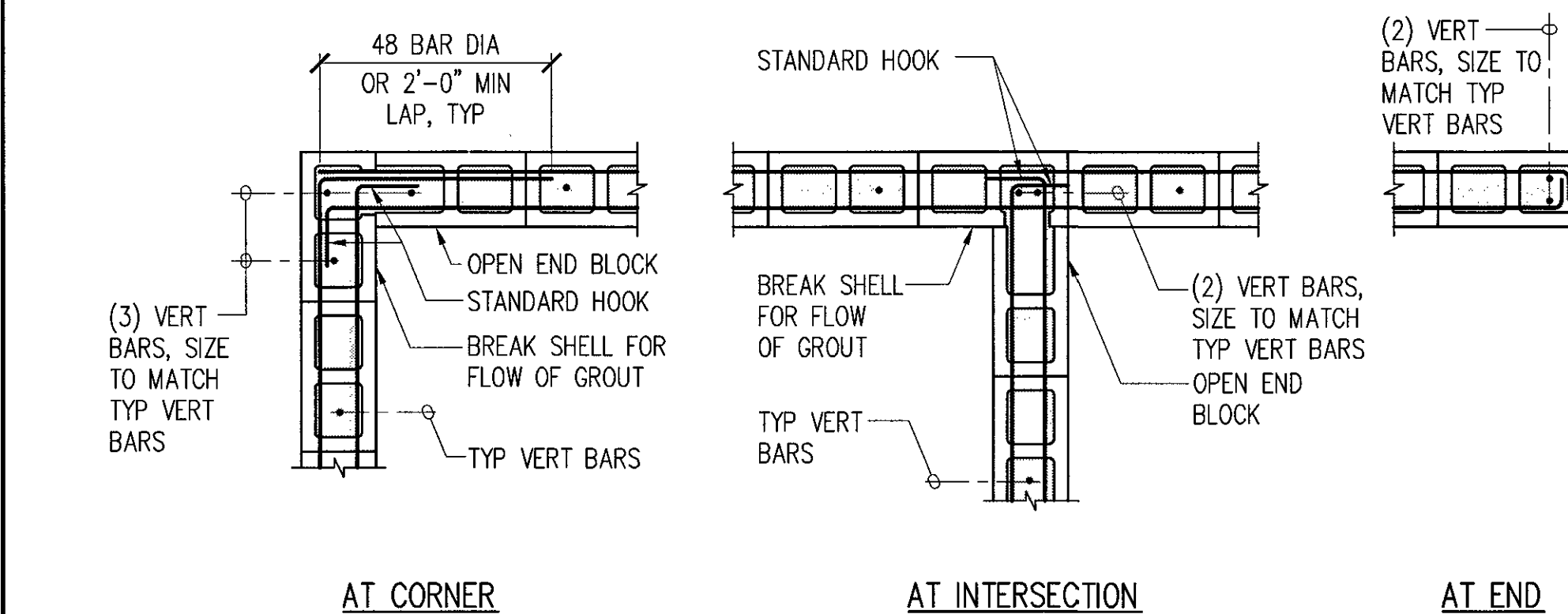
NOTE: ALL WALLS SHALL BE SOLID GROUTED.



**SECTION**  
NOT TO SCALE

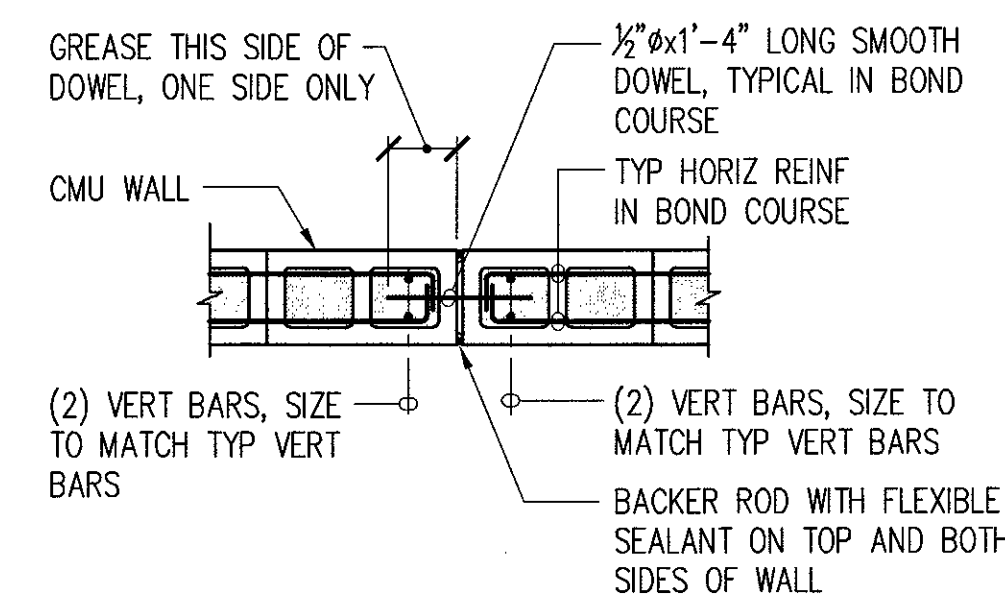
CMU WALL REINFORCING SCHEDULE				
WALL THICKNESS (INCHES)	BAR SIZE AND SPACING			REMARKS
	HORIZ	VERT		
4	(2) #3 AT 48"	#3 AT 24"		
6	(2) #4 AT 48"	(2) #4		AT DOWNSPOUT
8	(2) #4 AT 48"	#4 AT 16"		EXTERIOR WALLS
8	(2) #4 AT 48"	#5 AT 24"		INTERIOR WALLS

OPENING SCHEDULE					
OPENING WIDTH	LINTEL DEPTH (MINIMUM)	REINFORCING			REMARKS
		JAMB	LINTEL HORIZ	LINTEL VERT	
W < 5'-0"	2'-8"	(2) #4	(2) #4	#4 AT 8"	
5'-1" < W < 7'-0"	2'-8"	(2) #5	(2) #5	#4 AT 8"	
7'-1" < W < 9'-0"	4'-0"	(2) #6	(2) #8	#5 AT 8"	



**2 CMU WALL REINFORCING AT BOND BEAM**

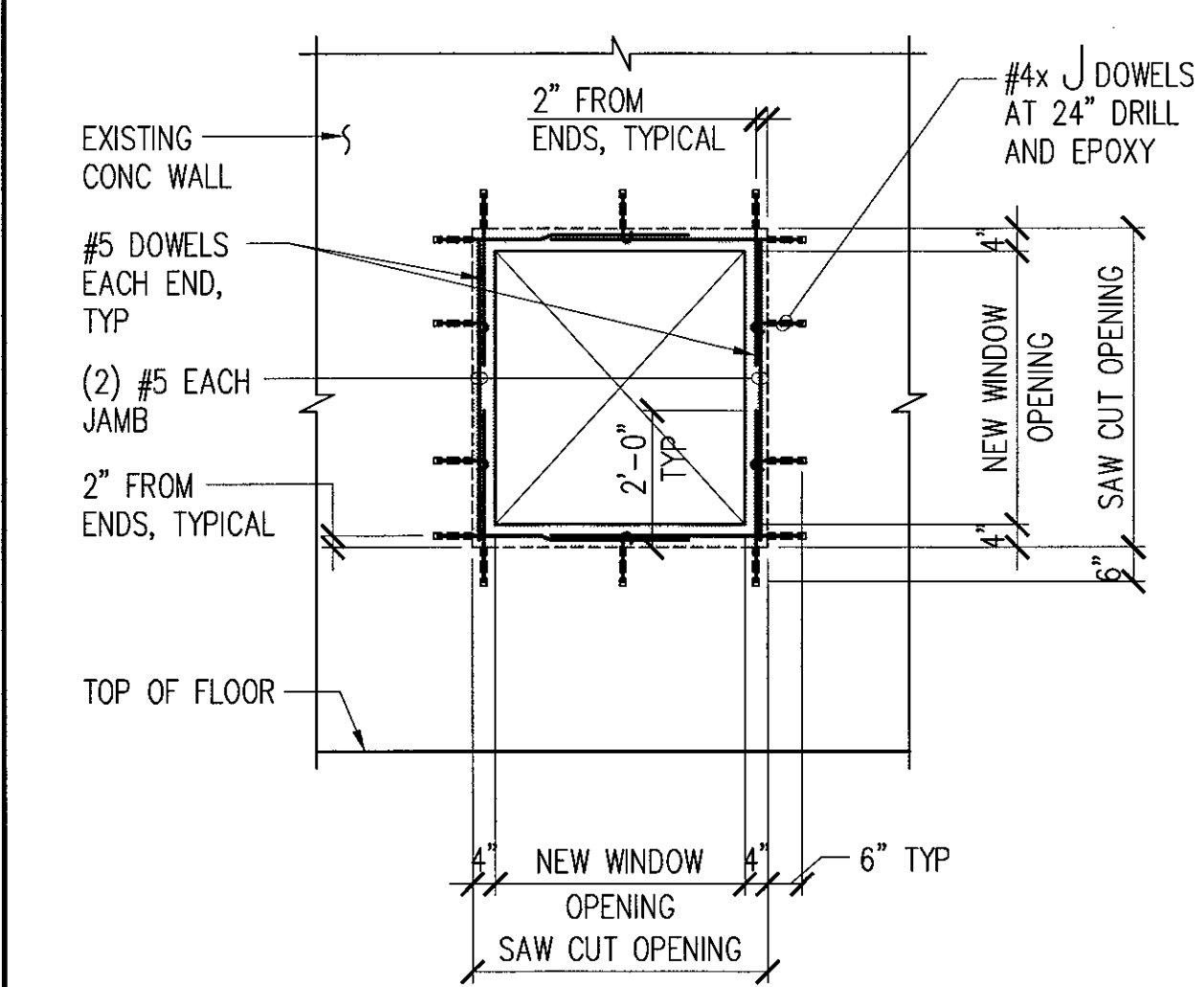
S-1 NOT TO SCALE



- NOTES:**
1. CONTROL JOINTS SHALL BE A MAXIMUM OF 25'-0" APART AND 10'-0" MINIMUM FROM CORNER, OR AS SHOWN ON PLANS.
  2. CONTROL JOINT SHALL BE CONTINUOUS VERTICAL LINE FROM TOP OF FOOTING TO TOP OF WALL.
  3. ALL HORIZONTAL REINFORCING SHALL BE DISCONTINUOUS ACROSS CONTROL JOINTS, EXCEPT BOND COURSE AT THE TOP OF WALLS.

**3 CONTROL JOINT FOR CMU WALLS**

S-1 NOT TO SCALE



**4 TYPICAL NEW WINDOW OPENING IN EXISTING CONCRETE WALL**

S-1 NOT TO SCALE

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
Signature: Paul J. ...  
DATE: 7/10/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

KEI YAZUO HAYASHI  
LICENSED PROFESSIONAL ENGINEER  
No. 6818-S  
HAWAII, U.S.A.

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

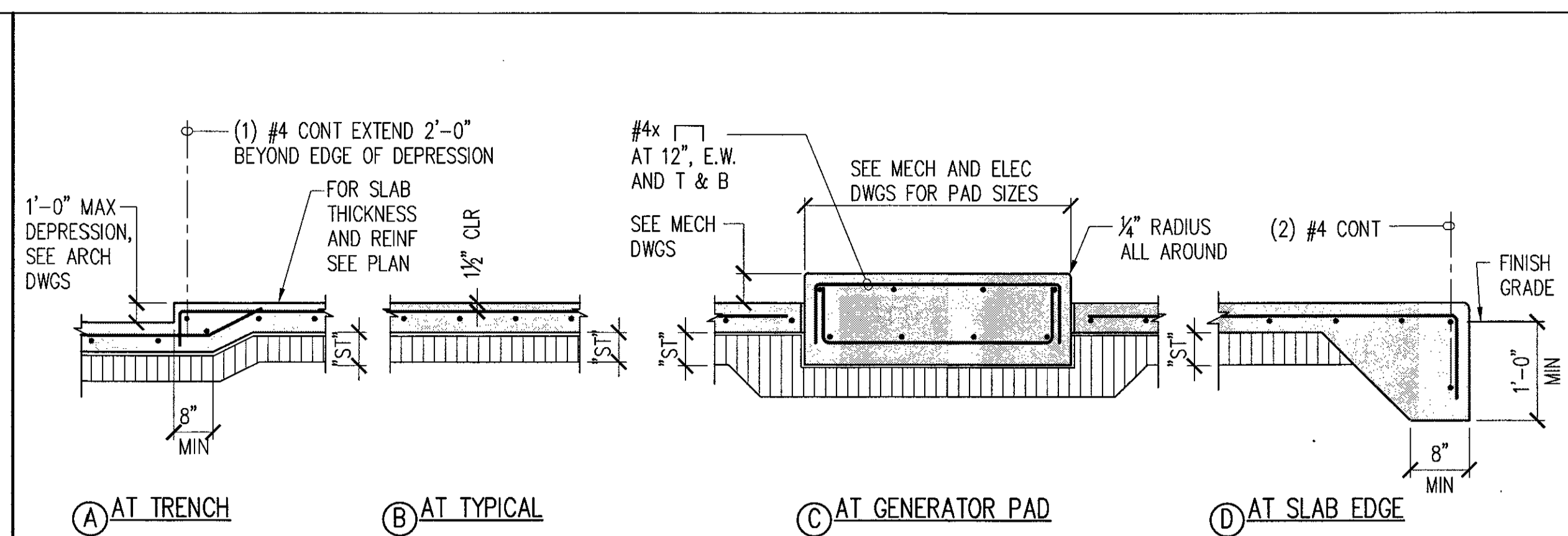
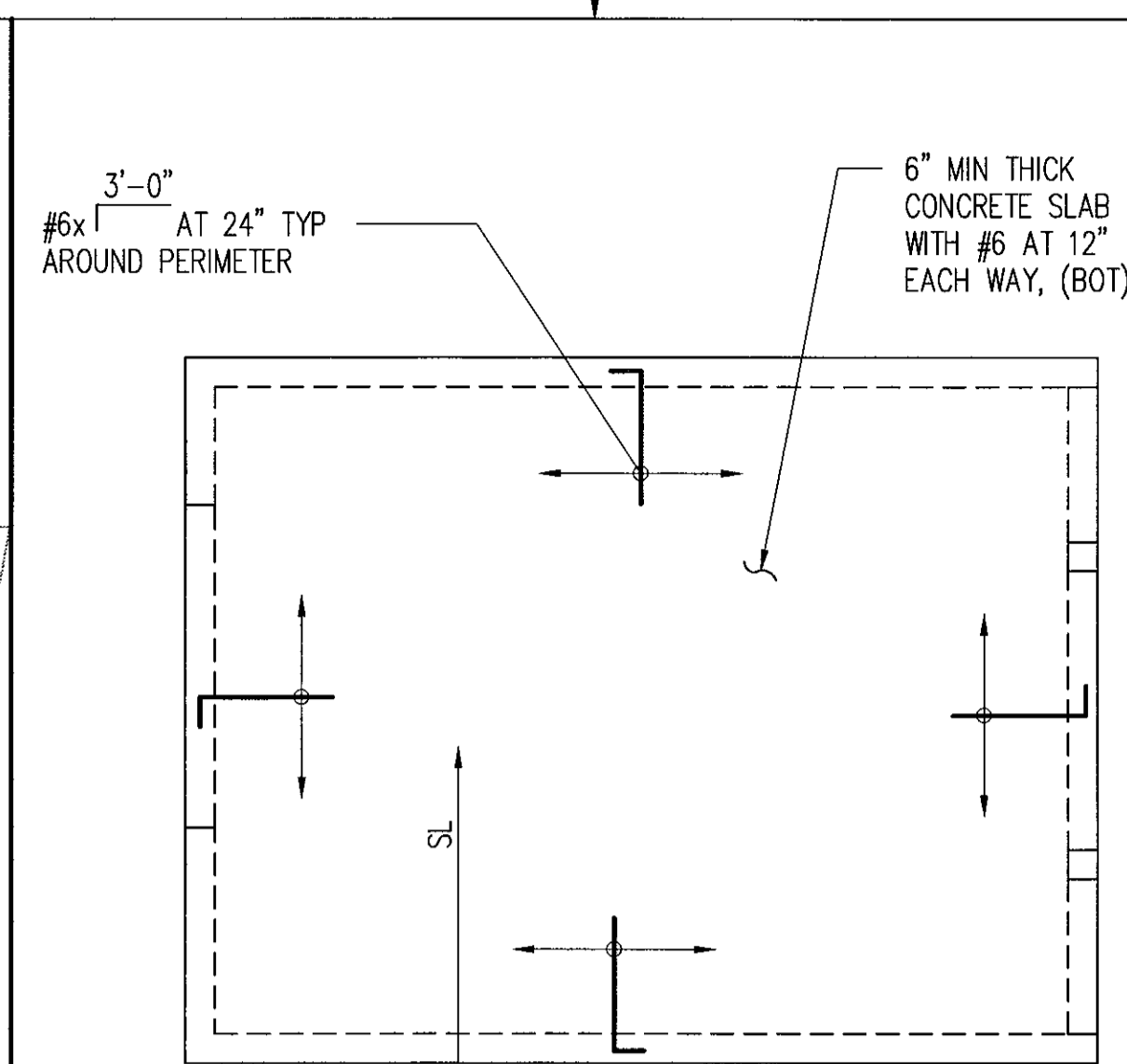
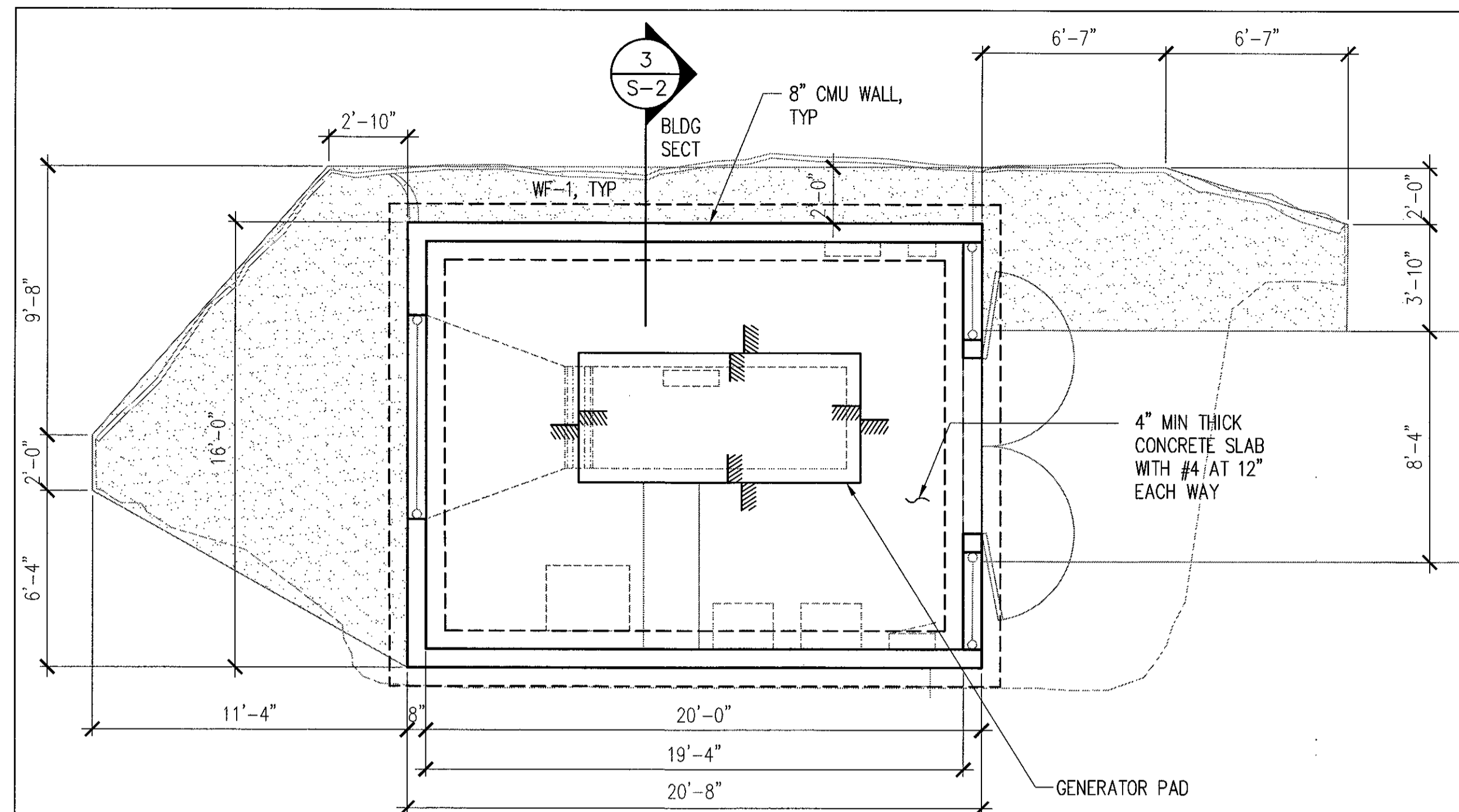
DESIGNER: KH  
DRAWN: JT  
SAFETY:  
SECURITY:  
APPROVED: 154 GP / BSE  
APPROVED: 154 GP / CC  
HANG / CC  
APPROVED: 154 CES / CEC PROJ ENR

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

GENERAL NOTES AND TYPICAL DETAILS

DATE: JAN. 31, 2011  
SCALE: S-1  
SHEET 24 of 57





SUBGRADE SCHEDULE

MARK	"ST"	MATERIAL	VAPOR RETARDER	REMARKS
SB-1	4"	3B FINE	YES	TYPICAL UNLESS NOTED OTHERWISE

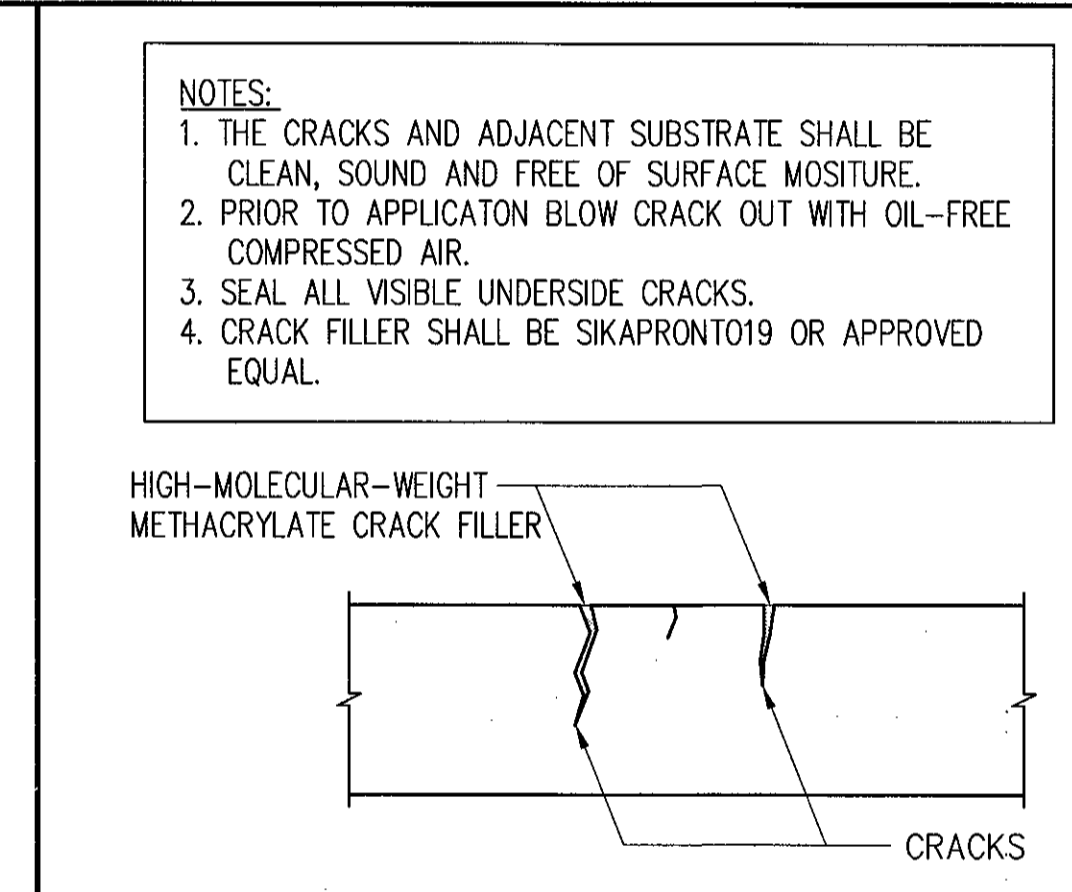
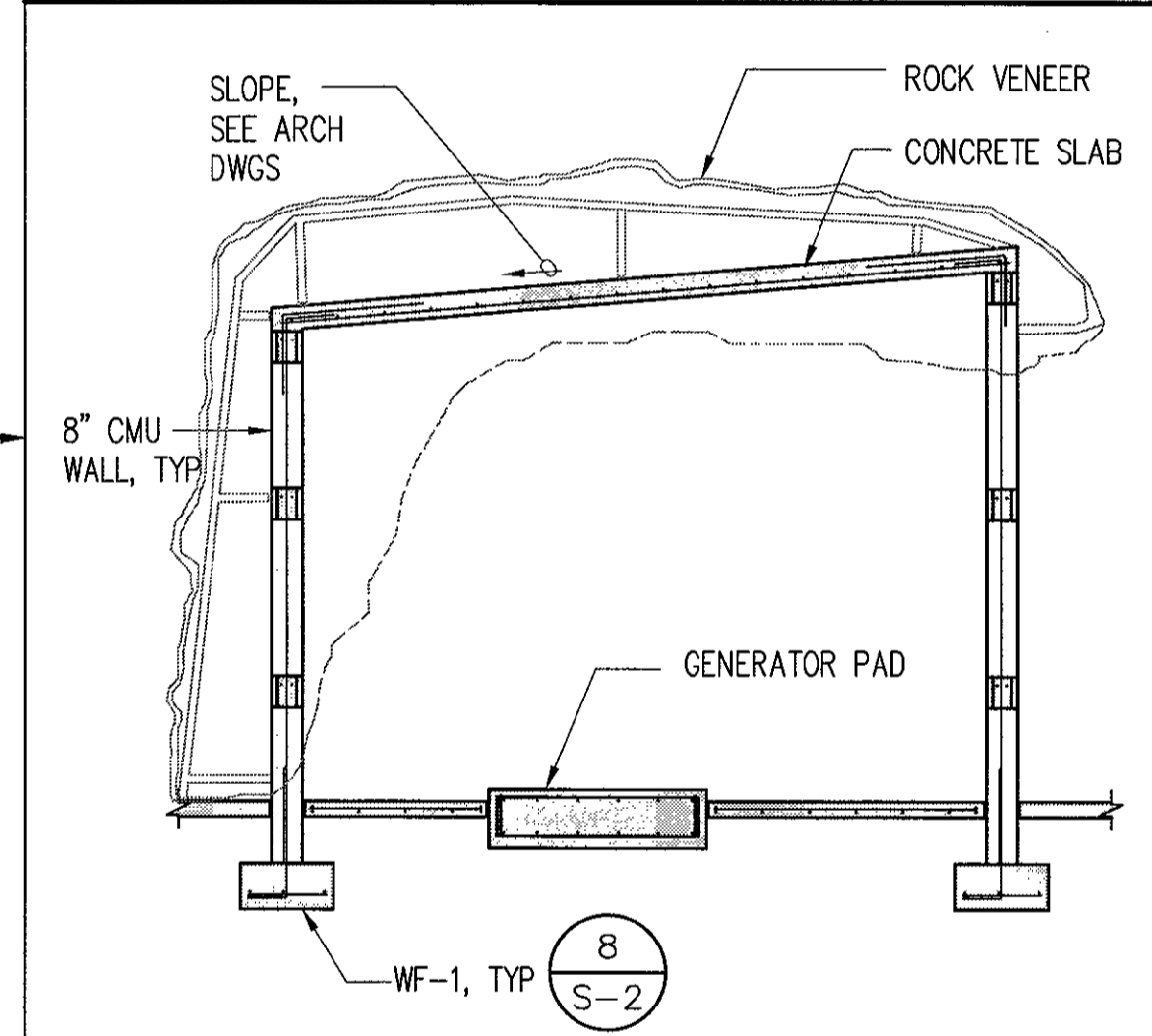
SLAB ON GRADE NOTES:

- THICKNESS OF SLAB ON GRADE SHOWN ARE MINIMUM AND SHALL BE MAINTAINED AT ALL SLOPED AND DEPRESSED AREAS.
- FOR FLOOR ELEVATIONS, DEPRESSED SLABS LOCATIONS, SLOPES TO DRAIN, AND EQUIPMENT PAD AND CURB LOCATIONS SEE ARCHITECTURAL, ELECTRICAL AND MECHANICAL DRAWINGS.

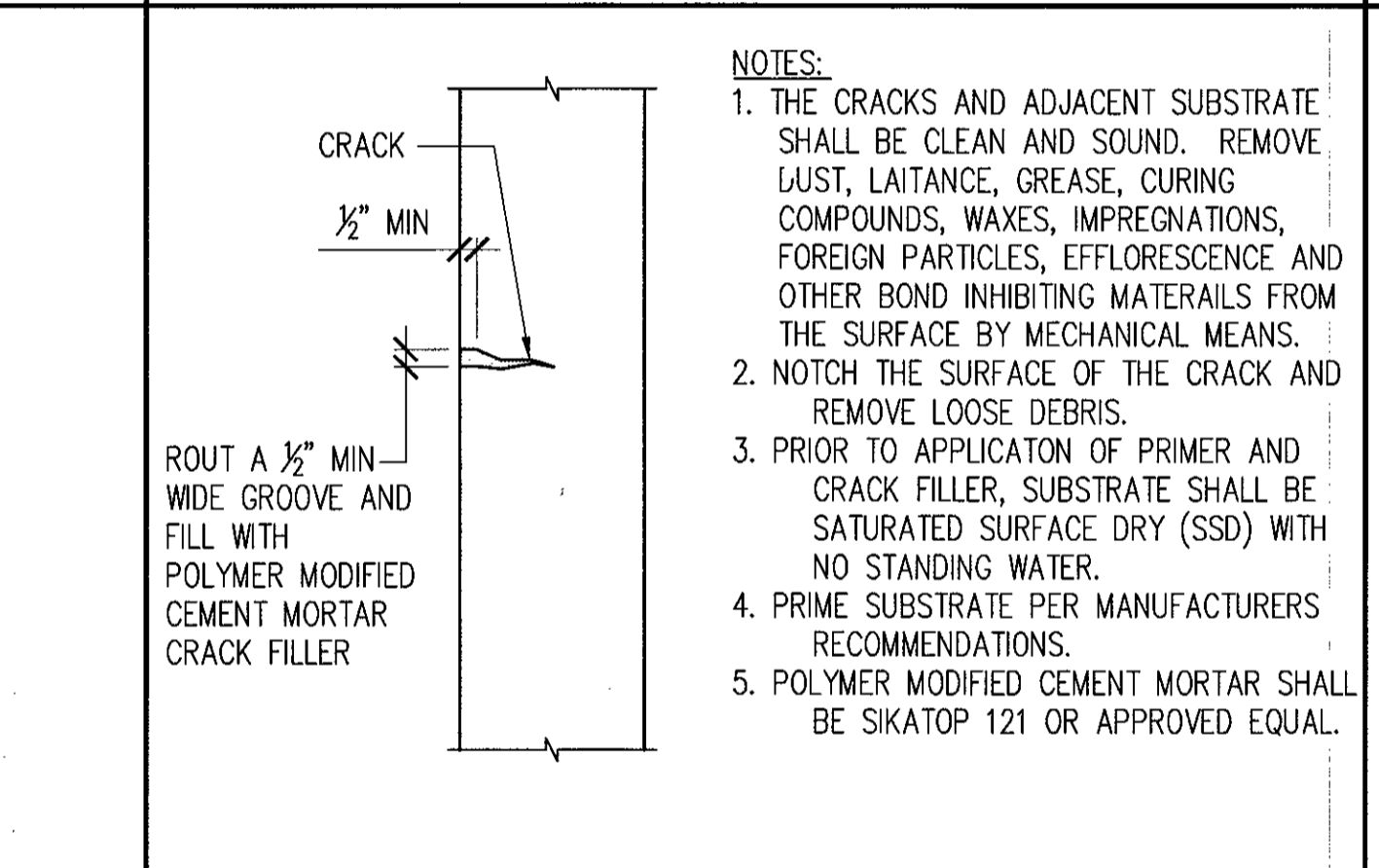
1 FOUNDATION PLAN  
S-2 SCALE: 1/4" = 1'-0"

2 ROOF FRAMING PLAN  
S-2 SCALE: 1/4" = 1'-0"

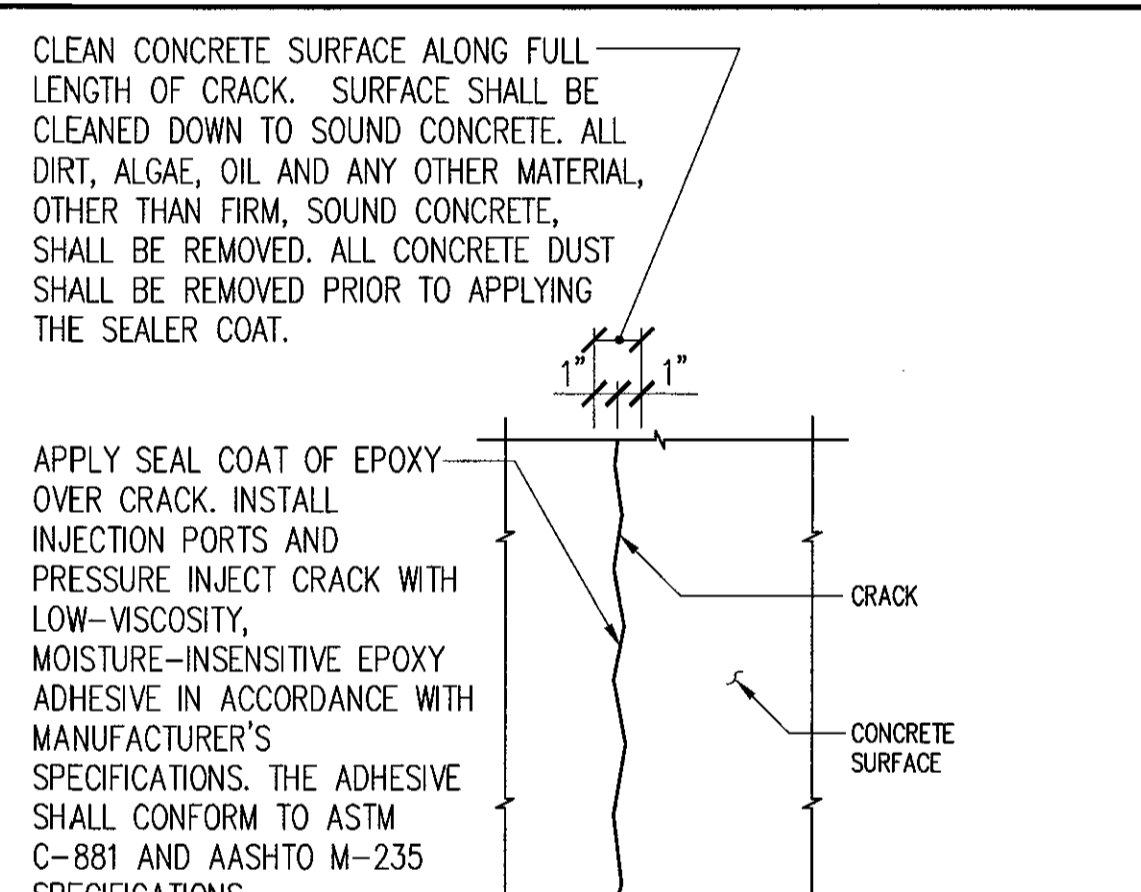
2A TYPICAL SLAB-ON-GRADE DETAILS  
S-2 NOT TO SCALE



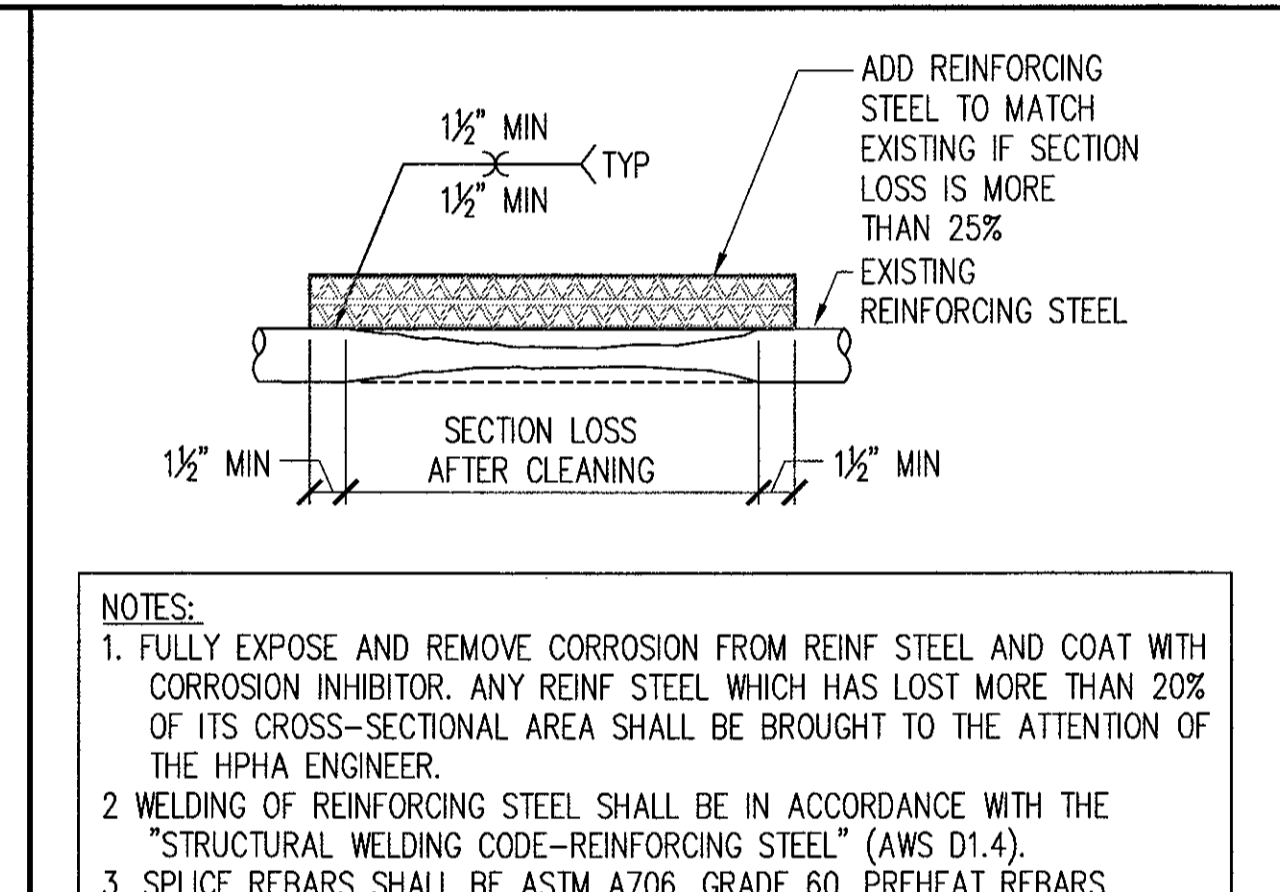
4 TYPICAL CONCRETE HORIZONTAL SURFACE REPAIR DETAIL  
S-2 NOT TO SCALE



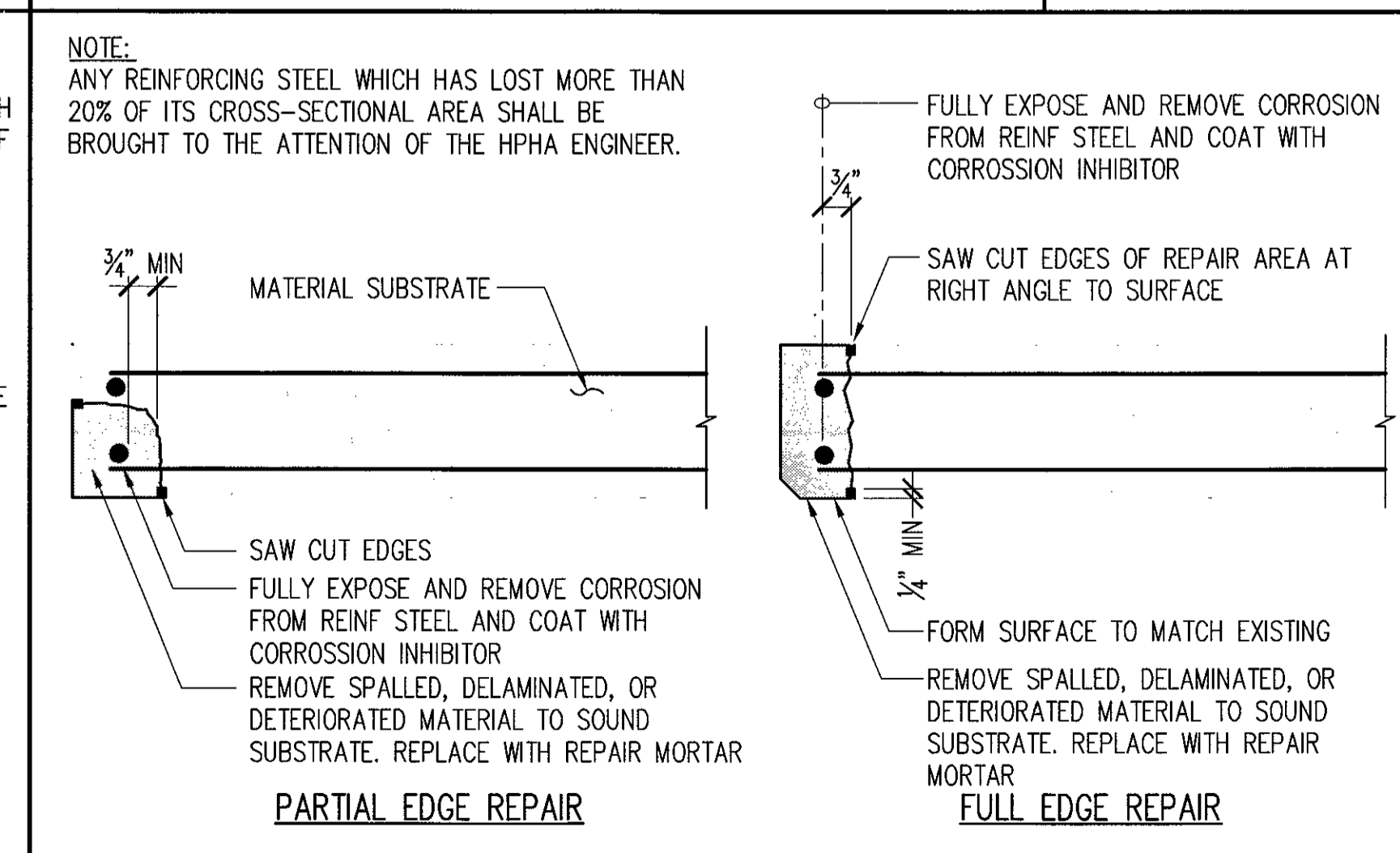
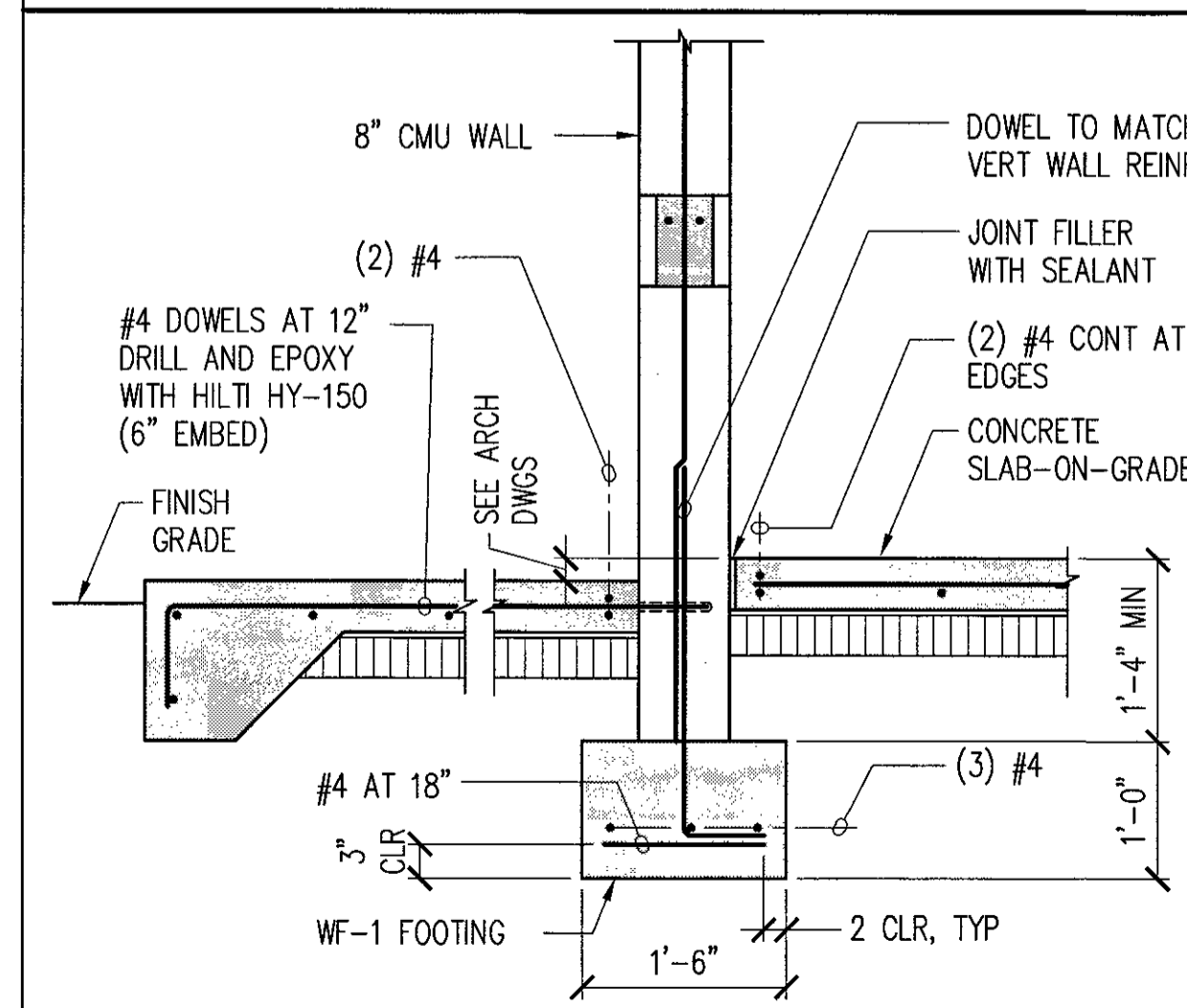
5 TYPICAL CONCRETE VERTICAL SURFACE REPAIR DETAIL (OVERHEAD SIMILAR)  
S-2 NOT TO SCALE



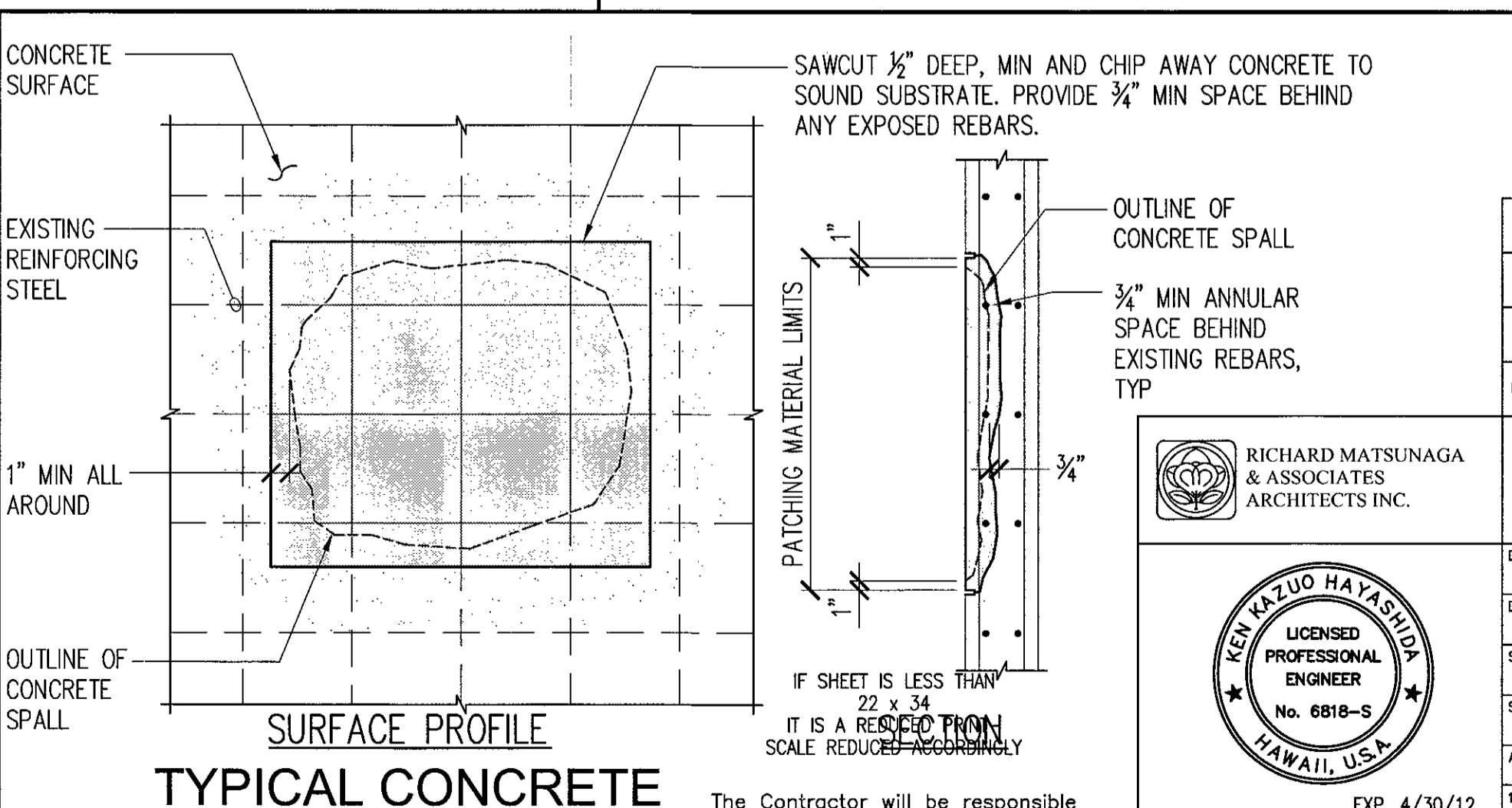
6 TYPICAL CONCRETE EPOXY INJECTION REPAIR DETAIL  
S-2 NOT TO SCALE



7 TYPICAL REINFORCING STEEL REPAIR DETAIL  
S-2 NOT TO SCALE



9 TYPICAL CONCRETE EDGE REPAIR DETAIL  
S-2 SCALE: NOT TO SCALE



10 TYPICAL CONCRETE SPALL REPAIR DETAIL  
S-2 NOT TO SCALE

AS BUILT

PAUL'S ELECTRICAL CONTRACTING LLC

Richard A. Paul

7/11/11

SIGNATURE DATE

REVISION NO DESCRIPTION DATE BY CHK'D

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: KH  
DRAWN: JT  
SAFETY:  
SECURITY:

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

FOUNDATION AND ROOF FRAMING PLANS

APPROVED: [Signature] DATE: JAN. 31, 2011

154 GP / BDE APPROVED: [Signature] DATE: [ ]  
154 GP / CC  
154 GP / COE  
154 GP / CED PROJ ENGR

SCALE: S-2  
SHEET 25 of 57

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

KEN KIZUO HAYASHIDA  
LICENSED PROFESSIONAL ENGINEER  
No. 6818-S  
HAWAII, U.S.A.

EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

**LEGEND AND ABBREVIATIONS**

**VENTILATION AND PLUMBING**

LEGEND		ABBREVIATIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR DUCT DN	∅	PHASE, DIAMETER
	EXHAUST, OUTSIDE OR RETURN AIR DUCT DN		EQUIPMENT INDICATOR A=EQUIPMENT ABBREVIATION B=MARK NUMBER
	TURNING VANES		THERMOSTAT
	DUCT (1ST FIGURE, SIDE SHOWN; 2ND FIGURE, SIDE NOT SHOWN)		
	VOLUME DAMPER		
	DUCT FLEXIBLE CONNECTION		
	RECTANGULAR DUCT TRANSITION		
	VENT PIPING		
	COLD WATER PIPING		
	FLOOR CLEAN-OUT OR CLEAN-OUT TO GRADE		
	PIPE UP		
	PIPE DN		
	FUEL OIL SUPPLY PIPING		
	FUEL OIL RETURN PIPING		

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	HP	HORSEPOWER
AMB	AMBIENT	HZ	HERTZ
AP	ACCESS PANEL	IN	INCHES
ARCH	ARCHITECTURAL	LBS	POUNDS
CFM	CUBIC FEET PER MINUTE	MFR	MANUFACTURER
CHW	CHILLED WATER	NO	NUMBER
CO	CLEAN-OUT	OA	OUTSIDE AIR
CONC	CONCRETE	OAD	OUTSIDE AIR DUCT
CONN	CONNECTION	OAR	OUTSIDE AIR REGISTER
CONT	CONTINUATION	OC	ON CENTER
CW	COLD WATER	POC	POINT OF CONNECTION
DN	DOWN	PRESS	PRESSURE
DT	DAY TANK	RPM	REVOLUTIONS PER MINUTE
DWGS	DRAWINGS	SAG	SUPPLY AIR GRILL
EAD	EXHAUST AIR DUCT	SCH	SCHEDULE
EAR	EXHAUST AIR REGISTER	SF	SQUARE FEET
EF	EXHAUST FAN	SHT	SHEET
ENT	ENTERING	SOV	SHUT-OFF VALVE
EXIST	EXISTING	SS	STAINLESS STEEL
*F	DEGREE FAHRENHEIT	ST	STORAGE TANK
FL	FLOOR	T	THERMOSTAT
FLEX	FLEXIBLE	TEMP	TEMPERATURE
FOR	FUEL OIL RETURN	TYP	TYPICAL
FOS	FUEL OIL SUPPLY	V	VOLTS
FT	FEET	VD	VOLUME DAMPER
GAL	GALLONS	VT	VENT
GALV	GALVANIZED	VTR	VENT THRU ROOF
GPH	GALLONS PER HOUR	W	WASTE
GPM	GALLONS PER MINUTE	W/	WITH
H	HEIGHT		
HB	HOSE BIBB		
H2O	WATER		

**MECHANICAL NOTES:**

1. THE INSTALLATION SHALL COMPLY WITH THE LATEST EDITIONS OF THE UPC, FIRE DEPARTMENT REGULATIONS, REGULATIONS OF THE DEPARTMENT OF HEALTH OF THE STATE OF HAWAII AND CITY AND COUNTY OF HONOLULU, OSHA AND ALL AGENCIES HAVING JURISDICTION OVER WORK. FIRE SAFETY DURING CONSTRUCTION, ALTERATION OR DEMOLITION SHALL BE IN ACCORDANCE WITH ARTICLE 87 OF THE 2000 UNIFORM FIRE CODE, AS AMENDED.
2. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL TRADES AND VERIFY FIELD CONDITIONS AFFECTING OR AFFECTED BY THIS INSTALLATION. SHOULD CONFLICTS OCCUR, THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY.
3. DESIGN HAS BEEN BASED ON EXISTING CONDITIONS THAT ARE EASILY AND READILY OBSERVABLE FOR FIELD VERIFICATION. HOWEVER, ASSUMPTIONS OF EXISTING CONDITIONS HAVE BEEN MADE FOR THOSE CONDITIONS THAT ARE NOT READILY ACCESSIBLE FOR FIELD VERIFICATION, EG, WITHIN WALLS, SHAFTS, ETC. FOR THESE AREAS WHICH WERE NOT VISUALLY ACCESSIBLE, CONDITIONS SHOWN ARE BASED ON AVAILABLE DRAWINGS OF THE EXISTING CONSTRUCTION OR BEST ASSUMPTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL SUCH HIDDEN CONDITIONS DURING CONSTRUCTION IN ORDER TO ACCOMPLISH WORK SHOWN ON THESE DRAWINGS.
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROPERLY COORDINATE AND SCHEDULE ALL WORK TO AVOID UNNECESSARY AND UNSCHEDULED SHUTDOWN OF SYSTEMS IN ORDER TO EXECUTE ALL WORK REQUIRED ON THIS PROJECT. PROVIDE ADVANCE NOTICE TO THE FACILITIES ENGINEER FOR ANY REQUIRED SYSTEMS SHUTDOWN.
5. COORDINATE INSTALLATION OF ALL NEW EQUIPMENT WITHIN THE AVAILABLE SPACE INDICATED TAKING INTO CONSIDERATION THE EXISTING EQUIPMENT, PIPING AND DUCTWORK THAT WILL REMAIN AND NEW CONNECTING DUCTWORK, PIPING, CABLE TRAYS AND WITH ALL OTHER WORK, TO INSURE CLEAR SPACE AROUND EQUIPMENT FOR SERVICE ACCESS PER MANUFACTURER'S RECOMMENDATIONS. MINIMIZE OFFSETS TO AVOID ADDITIONAL SYSTEM PRESSURE DROP.
6. ALL SURFACES/MATERIALS DISTURBED AS A RESULT OF DEMOLITION OR INSTALLATION OF NEW WORK SHALL BE REPLACED/FINISHED TO MATCH EXISTING ADJACENT SURFACES.
7. SEAL AND PATCH ALL HOLES RESULTING FROM DEMOLITION OR NEW WORK, FINISH TO MATCH EXISTING ADJACENT SURFACES.
8. PROVIDE DUCT AND PIPE SLEEVES AT ALL WALL PENETRATIONS, PROVIDE RESILIENT WATERPROOF CAULKING TO ELIMINATE VIBRATION TRANSMISSION.
9. PRIOR TO INSTALLATION OF ANY EQUIPMENT, DUCTWORK AND PIPING, PLAN AND COORDINATE INSTALLATION SUCH THAT ALL EQUIPMENT, VALVES, DAMPERS, ETC, ARE LOCATED FOR EASY ACCESS FOR SERVICE AND REPAIR.
10. INTERIOR DUCTWORK SHALL BE INSTALLED CONCEALED WITHIN THE CEILING SPACE. CHECK FIELD CONDITIONS FOR OPTIMUM ROUTING OF DUCTWORK.
11. ALL AIR CONDITIONING DUCT DIMENSIONS SHOWN ON THE DRAWINGS ARE NET INSIDE DIMENSIONS AND DOES NOT INCLUDE THICKNESS OF DUCT INSULATION AND REINFORCEMENTS.
12. PROVIDE VOLUME DAMPER AT BRANCH DUCTS WHERE REQUIRED FOR PROPER BALANCING OF AIR SYSTEM.
13. CONTRACTOR SHALL ALLOW FOUR (4) HOURS OF FOLLOW UP BALANCING WORK AFTER OCCUPANCY TO REMEDY ANY AIR DRAFT AND NOISE PROBLEMS IDENTIFIED BY OWNER.
14. PROVIDE PROTECTIVE EPOXY COATING ON ALL EQUIPMENT AND PIPE SUPPORTS CONSTRUCTED OF FERROUS MATERIALS INSTALLED ON THE EXTERIOR.
15. GENERATOR EXHAUST PIPE SHALL BE INSTALLED WITHOUT DIPS OR SAGS, SLOPED AT 1/8 INCH PER FOOT, TOWARD THE EXTERIOR.
16. PROVIDE DIESEL FUEL OIL NECESSARY FOR EMERGENCY GENERATORS FOR TESTING AND START-UP. UPON COMPLETION OF TESTING AND START-UP, REFILL FUEL SYSTEM (FUEL TANK AND DAY TANK) TO FULL CAPACITY.
17. DRAWINGS ARE NOT INTENDED TO SHOW EXACT INSTALLATION OF PIPING. PROVIDE OFFSETS AS NECESSARY TO AVOID OBSTRUCTIONS OR INTERFERENCE WITH OTHER TRADES. REVIEW ALL PIPING RUNS PRIOR TO FABRICATION AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY INTERFERENCES AND/OR LACK OF ADEQUATE CLEARANCES AND/OR SLOPE.
18. THE EXISTING 60KW GENERATOR IN THE EXISTING GENERATOR BUILDING SHALL REMAIN IN OPERATION AND CONNECTED TO THE EXISTING ELECTRICAL SYSTEM UNTIL THE NEW GENERATOR "A" (IN NEW BUILDING) AND NEW FUEL SYSTEM AND ELECTRICAL SYSTEM IS IN OPERATION.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 Signature: *Paul J. ...* Date: 7/11/11

**CITY AND COUNTY OF HONOLULU  
 REVISED ORDINANCE CHAPTER 32,  
 HONOLULU COUNTY CODE 1990, AS AMENDED**

To the best of my knowledge, this project's design substantially conforms to the Energy Code for:

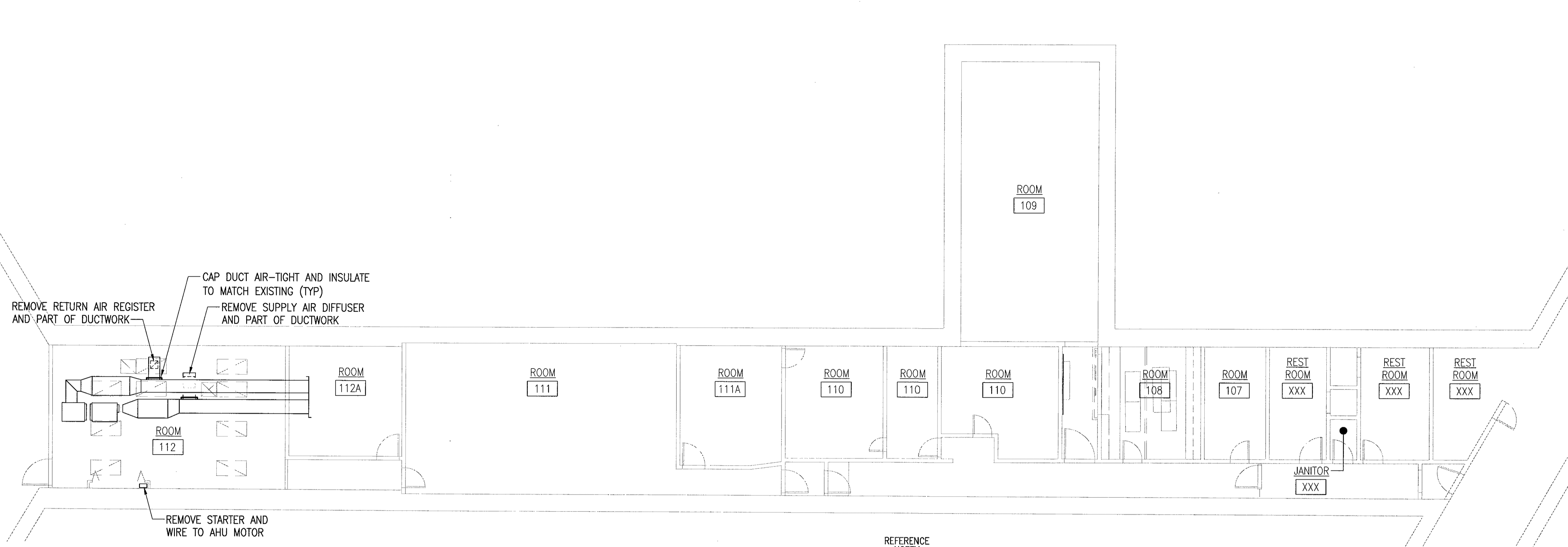
Building Component Systems  
 Electrical Component Systems  
 Mechanical Component Systems

Signature: *Malcolm Y. Miyashiro* Date: 06/28/11  
 Name: MALCOLM Y. MIYASHIRO  
 Title: PROJECT ENGINEER  
 License No.: 2465-M

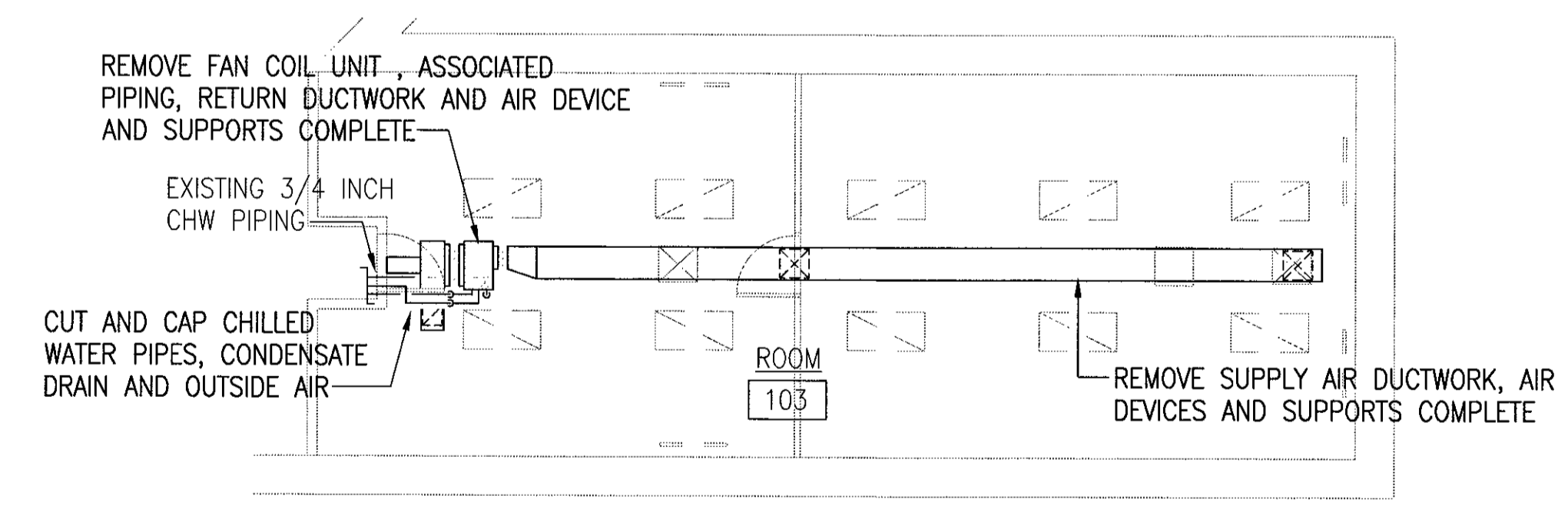
IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

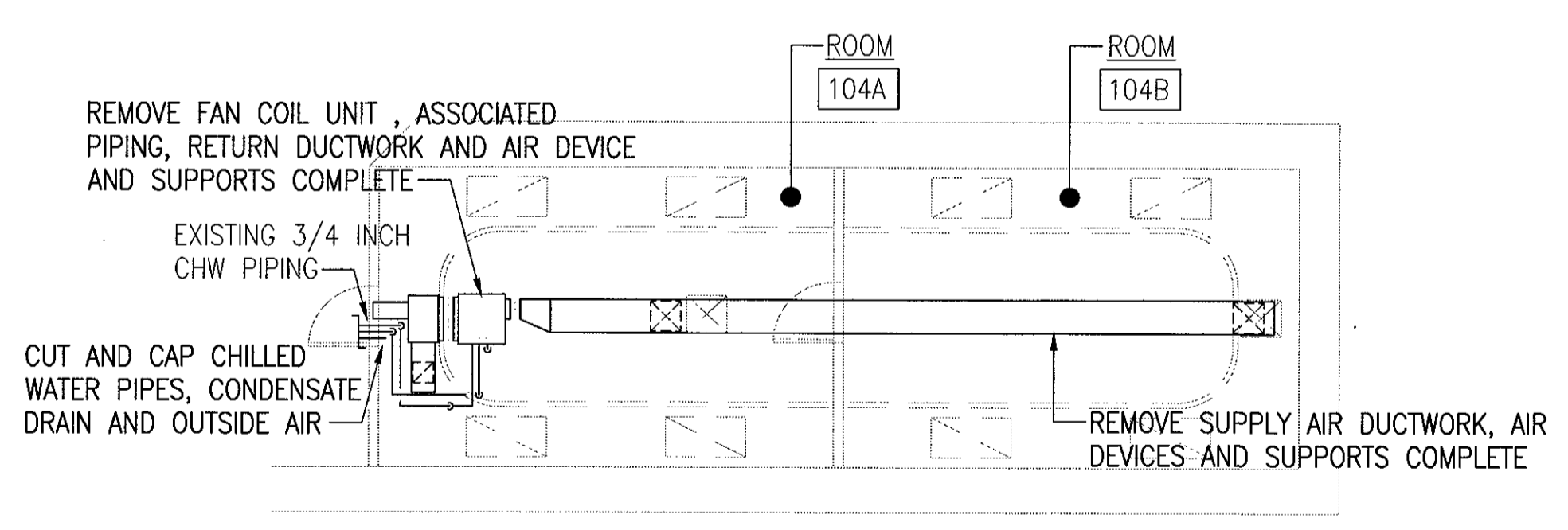
		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED: NA	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE		
DRAWN: JT	LEGEND, ABBREVIATIONS AND NOTES		
SAFETY: -			
SECURITY: -			
APPROVED: [Signature]	APPROVED: [Signature]	DATE	JAN 31, 2011
154 GP / BCE	154 GP / CC	SCALE:	
APPROVED: [Signature]	APPROVED: [Signature]	DWG #	M-001
154 GP / CC	154 GP / CCE	SHEET	26 of 57



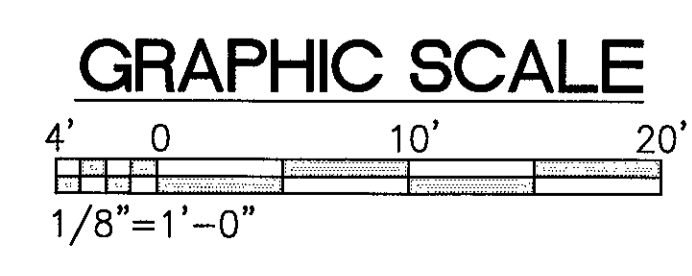
1 PARTIAL MECHANICAL DEMOLITION PLAN  
 MD-101 SCALE: 1/8"=1'-0"  
 REFERENCE NORTH  
 WEST EAST  
 SOUTH



2 PARTIAL MECHANICAL DEMOLITION PLAN  
 MD-101 SCALE: 1/8"=1'-0"  
 REFERENCE NORTH  
 WEST EAST  
 SOUTH



3 PARTIAL MECHANICAL DEMOLITION PLAN  
 MD-101 SCALE: 1/8"=1'-0"  
 REFERENCE NORTH  
 WEST EAST  
 SOUTH

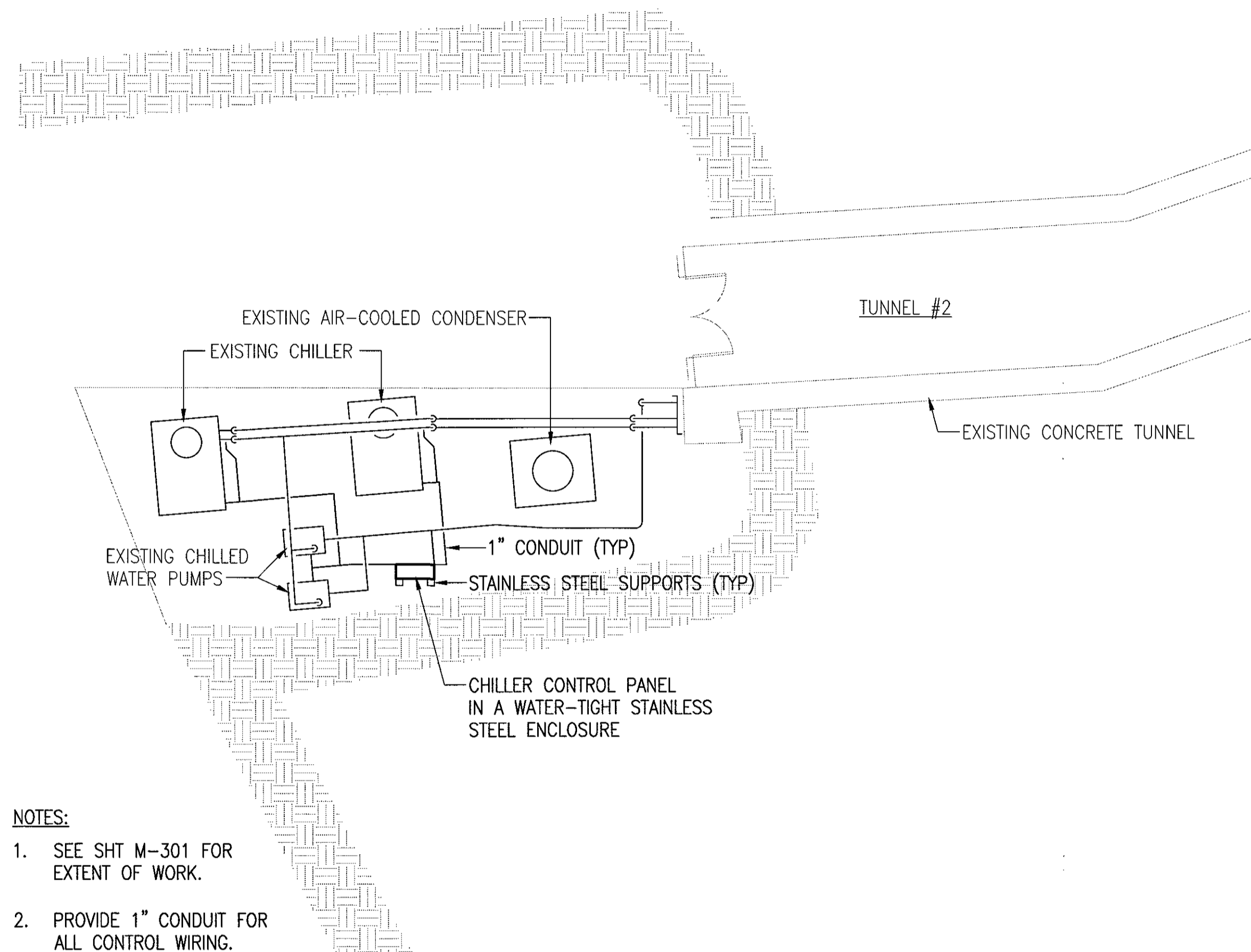


IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT—SCALE REDUCED ACCORDINGLY  
 The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 SIGNATURE: *Paul J. Paul* DATE: 7/11/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

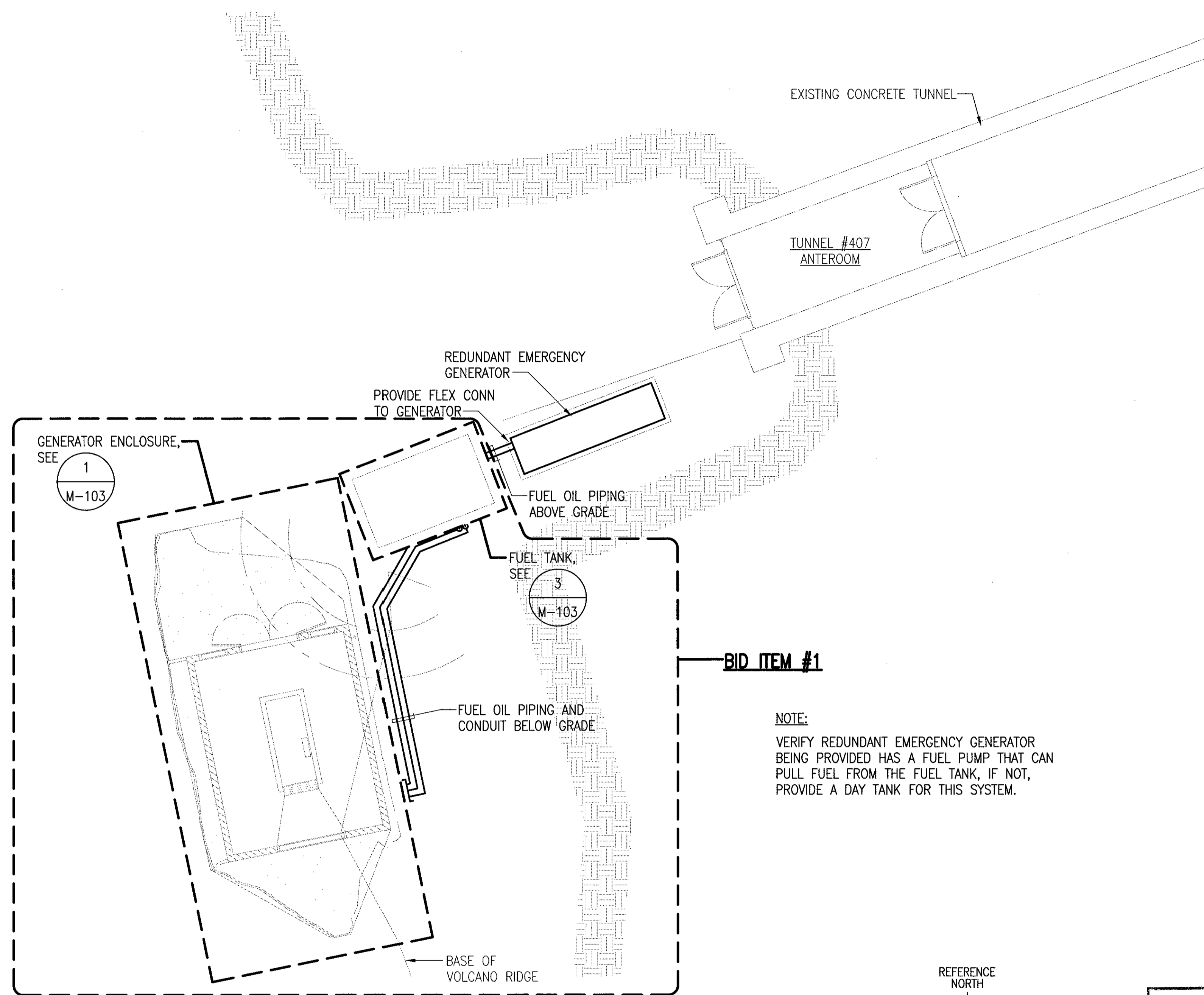
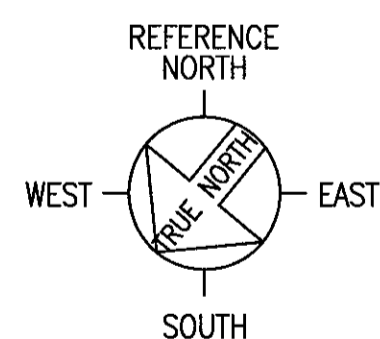
		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED: NA	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE		
DRAWN: JT	PARTIAL DEMOLITION PLANS		
SAFETY: —	APPROVED: _____ DATE: JAN 31, 2011		
SECURITY: —	APPROVED: _____ SCALE: _____		
APPROVED: _____	APPROVED: _____		DWG # MD-101
154 GP / BCE	154 GP / CC		SHEET 27 OF 57
APPROVED: _____	APPROVED: _____		
154 CES / CEC PROJ ENGR	154 CES / CEC PROJ ENGR		



NOTES:

- SEE SHT M-301 FOR EXTENT OF WORK.
- PROVIDE 1" CONDUIT FOR ALL CONTROL WIRING.

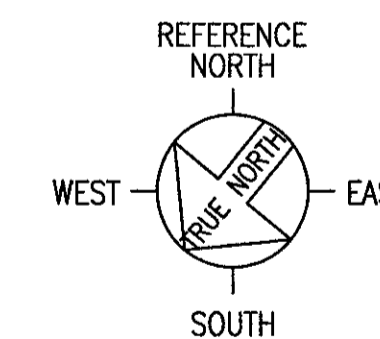
1 TUNNEL ENTRANCE #2 MECHANICAL PLAN  
M-101 SCALE: 1/8"=1'-0"



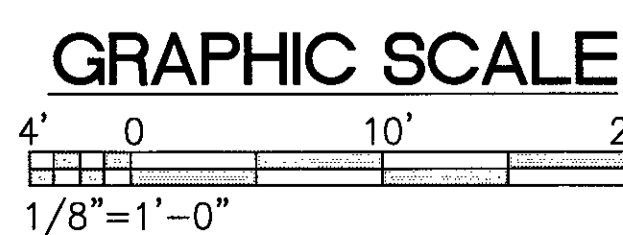
BID ITEM #1

NOTE:  
VERIFY REDUNDANT EMERGENCY GENERATOR BEING PROVIDED HAS A FUEL PUMP THAT CAN PULL FUEL FROM THE FUEL TANK, IF NOT, PROVIDE A DAY TANK FOR THIS SYSTEM.

2 TUNNEL ENTRANCE #1 MECHANICAL PLAN  
M-101 SCALE: 1/8"=1'-0"



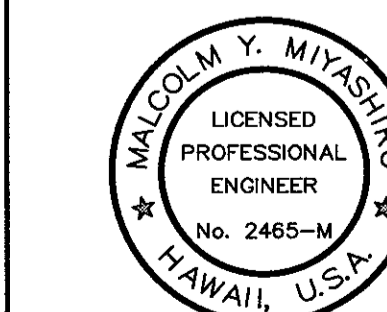
AS BUILT  
PAUL'S ELECTRICAL CONTRACTING LLC  
Signature: *Richard J. Paul* 7/11/14  
DATE



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

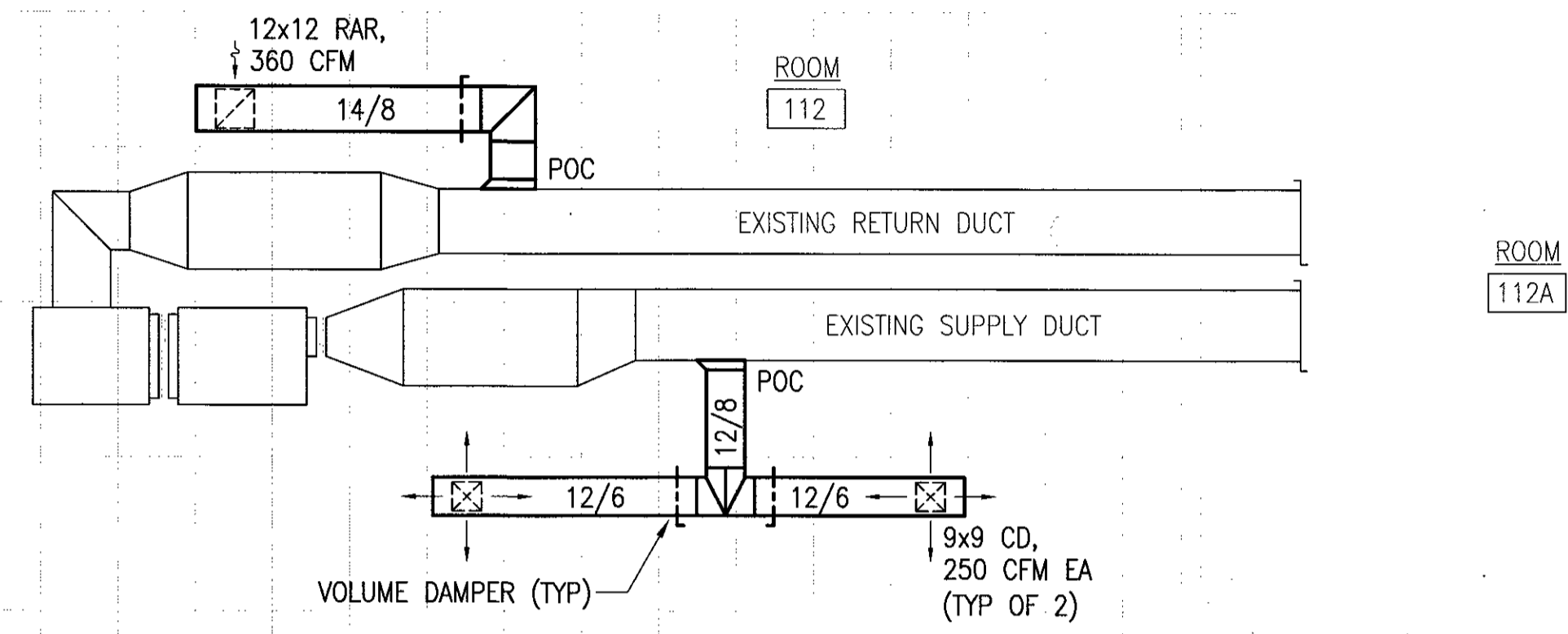


EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Malcolm Y. Miyashiro*

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

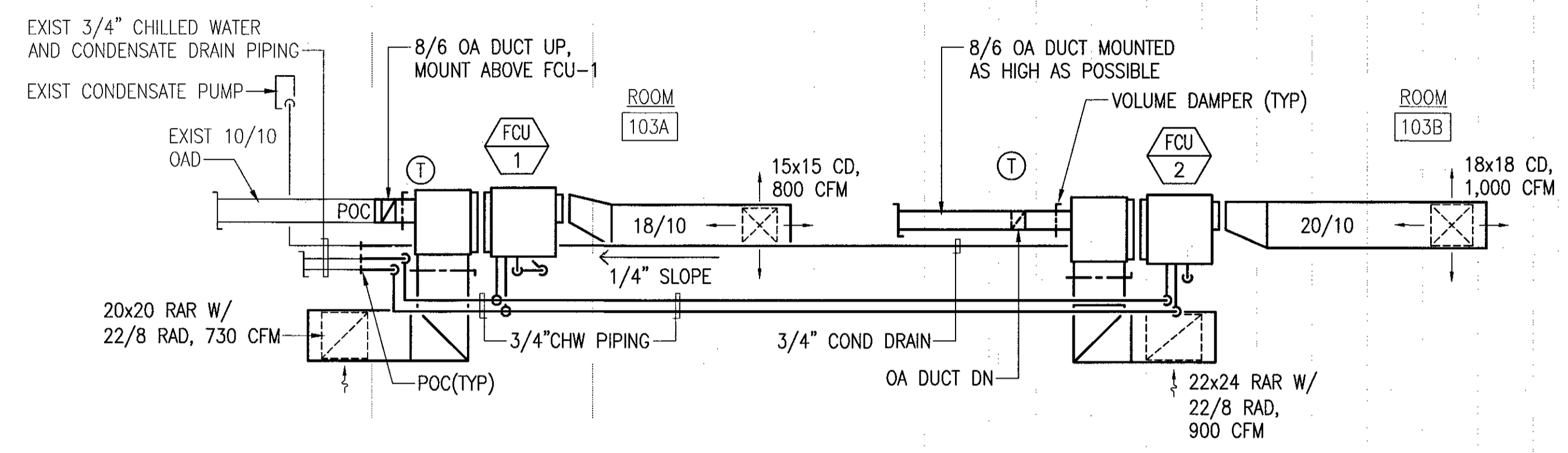
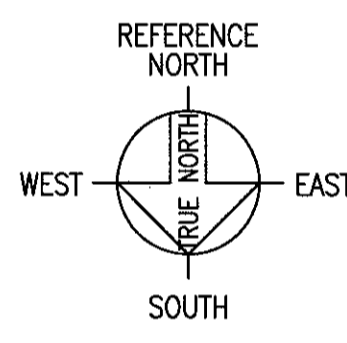
  

DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII				
DESIGNED:	NA	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE		
DRAWN:	JT	PARTIAL MECHANICAL PLANS - TUNNEL ENTRANCES		
SAFETY:	-			
SECURITY:	-			
APPROVED:		APPROVED:		DATE
154 GP / BDC		154 GP / CC		JAN 31, 2011
APPROVED:		APPROVED:		SCALE
HIANG / CC		HIANG / COE		DWG #
APPROVED:		APPROVED:		M-101
TAG - HAWAII		154 CES / CEC PROJ ENGR		SHEET
				28 of 57



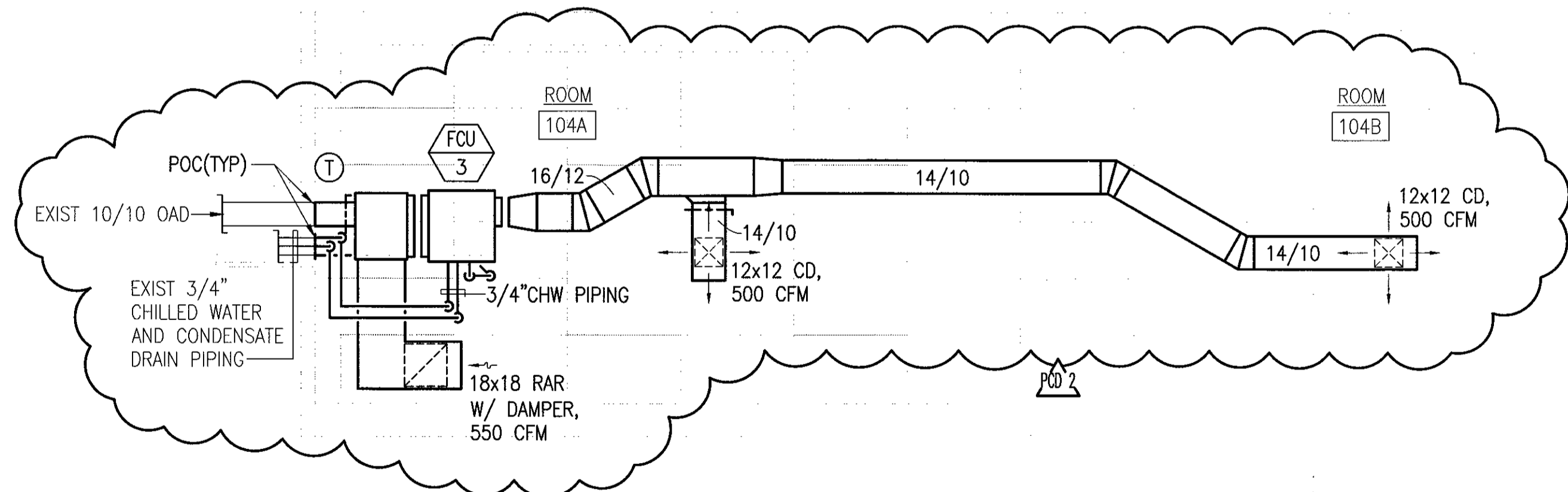
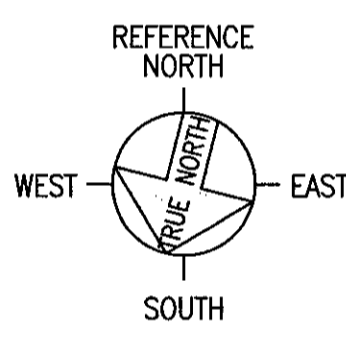
VOLTAGE MONITOR  
NEW STARTER, PROVIDE NEW WIRE BETWEEN STARTER AND EXISTING AHU MOTOR, SEE ELECTRICAL DWGS

1 PARTIAL MECHANICAL PLAN - ROOM 112  
M-102 SCALE: 1/4"=1'-0"



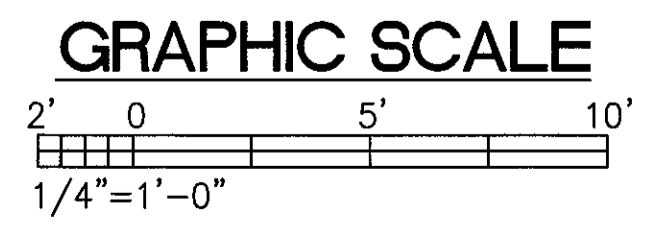
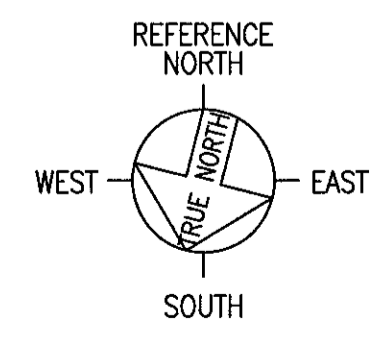
NOTE:  
COORDINATE LOCATION OF MECHANICAL SYSTEMS (FCU, DUCTWORK, PIPING, ETC.) WITH ELECTRICAL SYSTEMS (LIGHTS, CABLE TRAYS, CONDUITS, ETC.).

2 PARTIAL MECHANICAL PLAN - ROOM 103  
M-102 SCALE: 1/4"=1'-0"



NOTE:  
COORDINATE LOCATION OF MECHANICAL SYSTEMS (FCU, DUCTWORK, PIPING, ETC.) WITH ELECTRICAL SYSTEMS (LIGHTS, CABLE TRAYS, CONDUITS, ETC.).

3 PARTIAL MECHANICAL PLAN - ROOM 104  
M-102 SCALE: 1/4"=1'-0"



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY  
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
Signature: [Handwritten Signature] 7/11/14  
DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D
POD 2	A/C DESIGN IN ROOM 104	07/27/12		

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

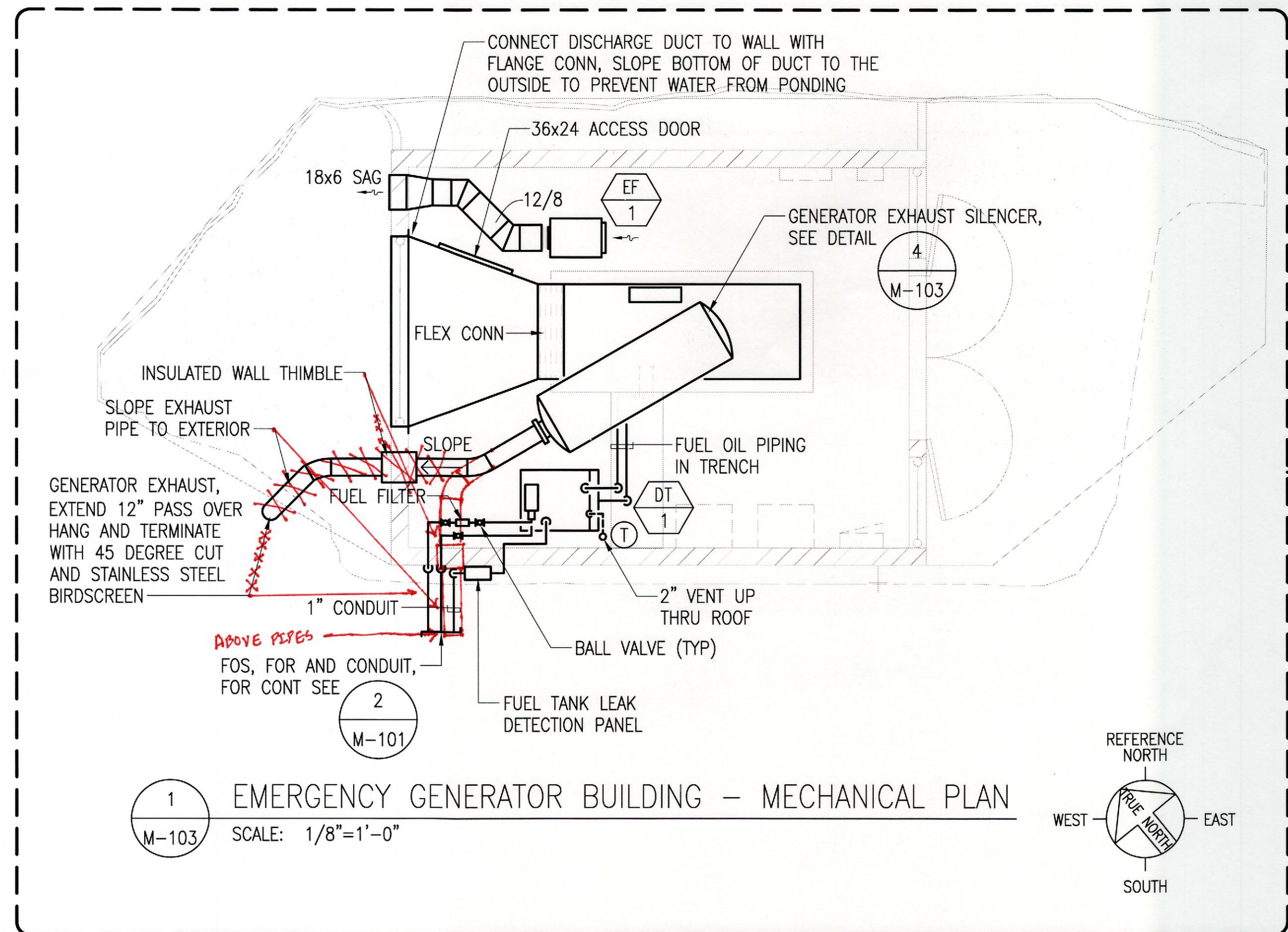
DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: \_\_\_\_\_  
DRAWN: \_\_\_\_\_  
SAFETY: \_\_\_\_\_  
SECURITY: \_\_\_\_\_  
APPROVED: \_\_\_\_\_  
154 GP / RCE  
APPROVED: \_\_\_\_\_  
154 GP / CC  
APPROVED: \_\_\_\_\_  
154 QES / CED PROJ ENGR

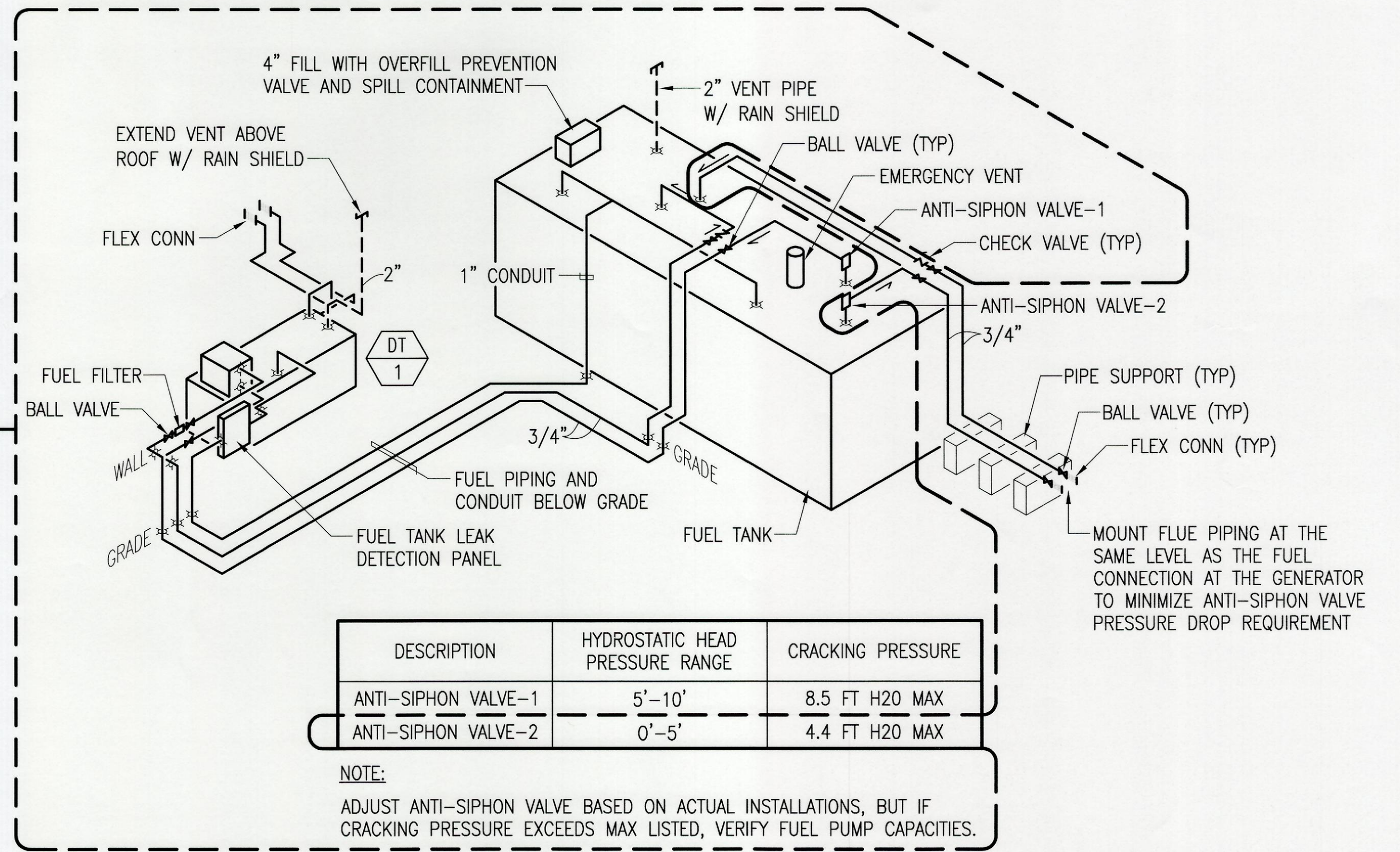
EXP. 4/30/14  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
Signature: [Handwritten Signature]

PARTIAL MECHANICAL PLANS

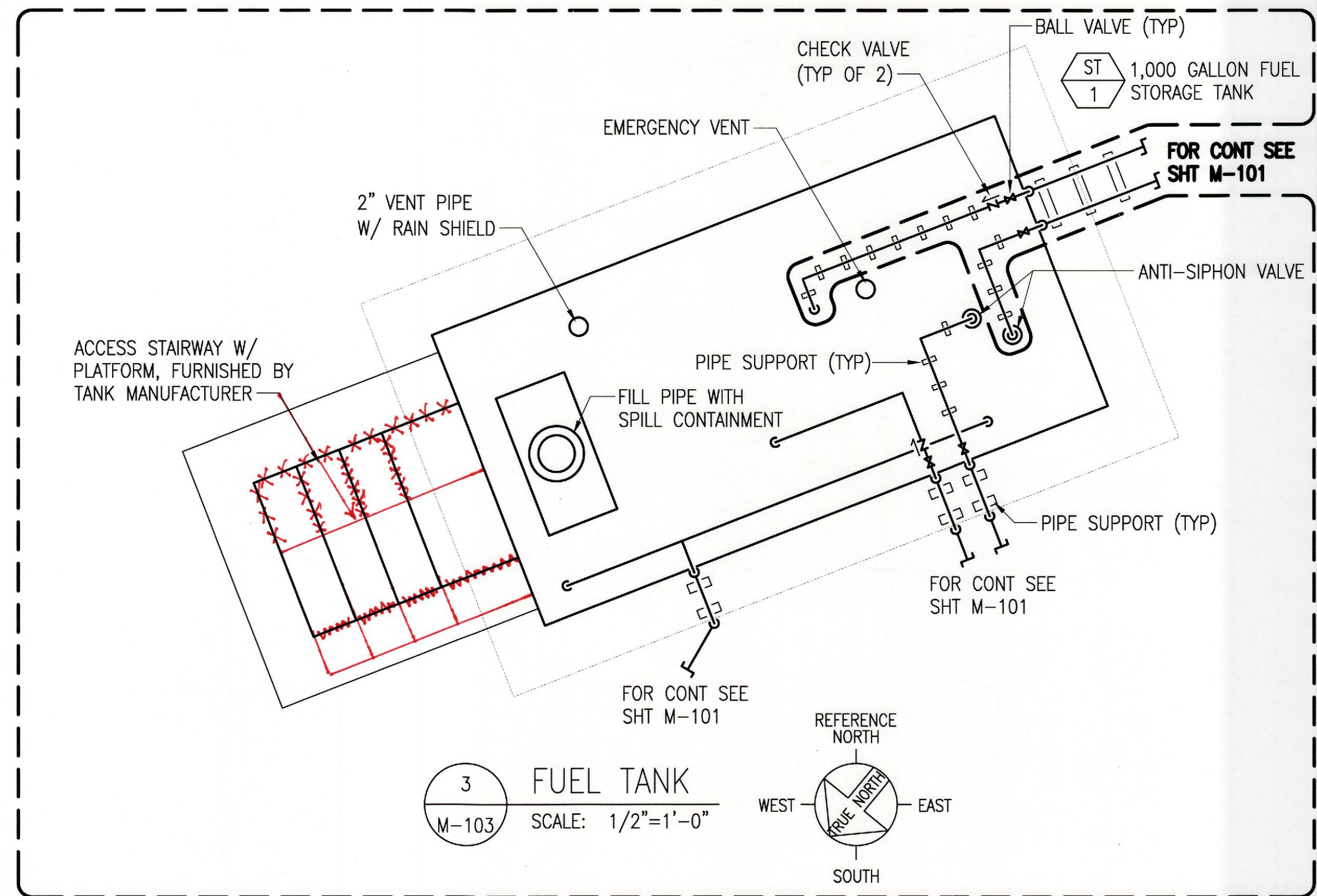
SCALE: \_\_\_\_\_  
DWG # M-102  
SHEET 29 of



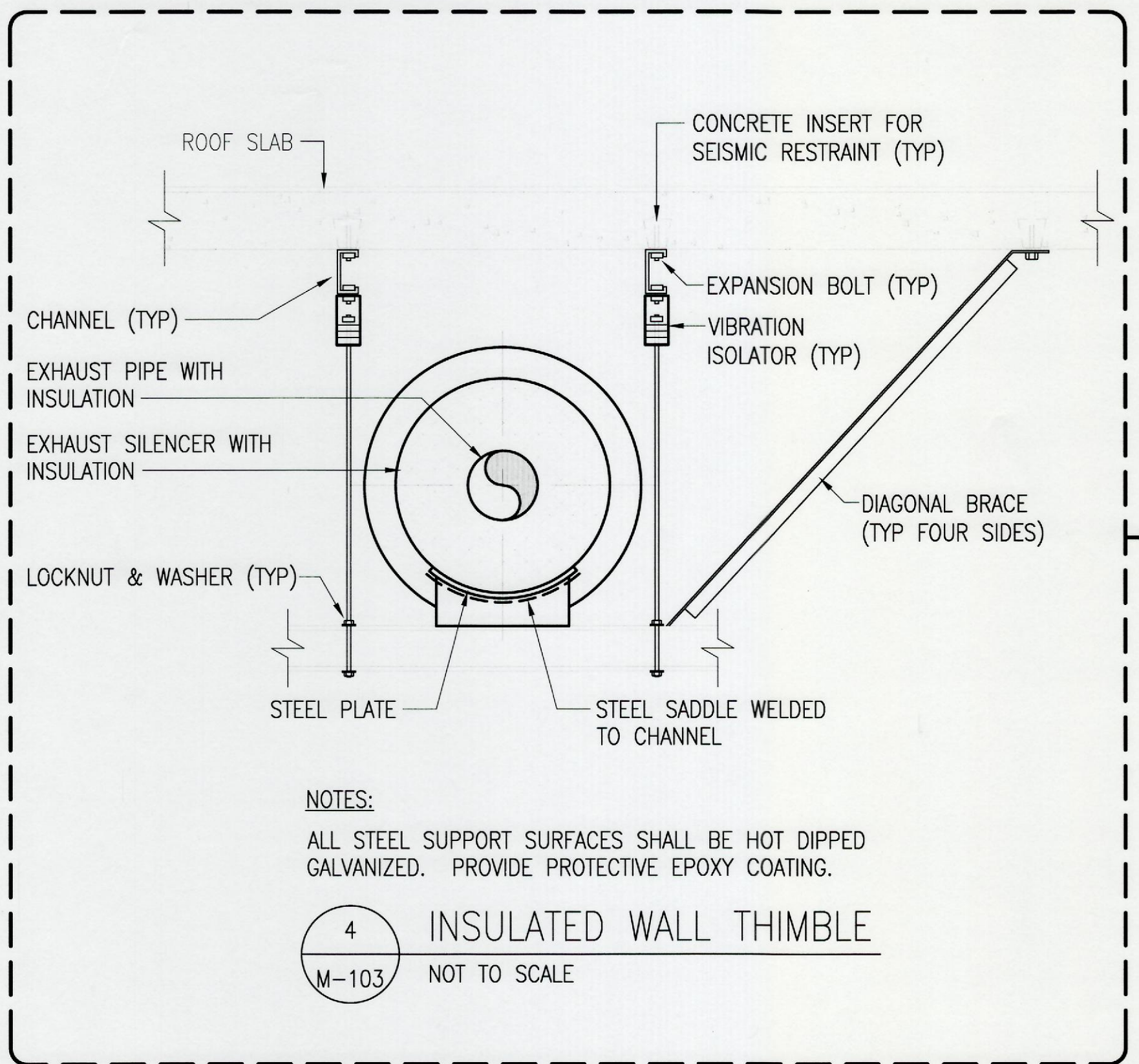
BID ITEM #1



BID ITEM #1



BID ITEM #1



BID ITEM #1

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul J. Paul* 7/11/14  
SIGNATURE DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: NA  
DRAWN: JT  
SAFETY: -  
SECURITY: -

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

MECHANICAL PLAN - GENERATOR BUILDING, FUEL OIL DIAGRAM AND DETAIL

APPROVED: [Signature] EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

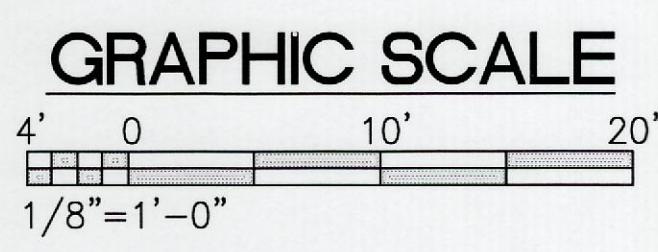
APPROVED: [Signature] TAG - HAWAII

APPROVED: [Signature] 154 GP / CEC PROJ ENGR

DATE: JAN 31, 2011

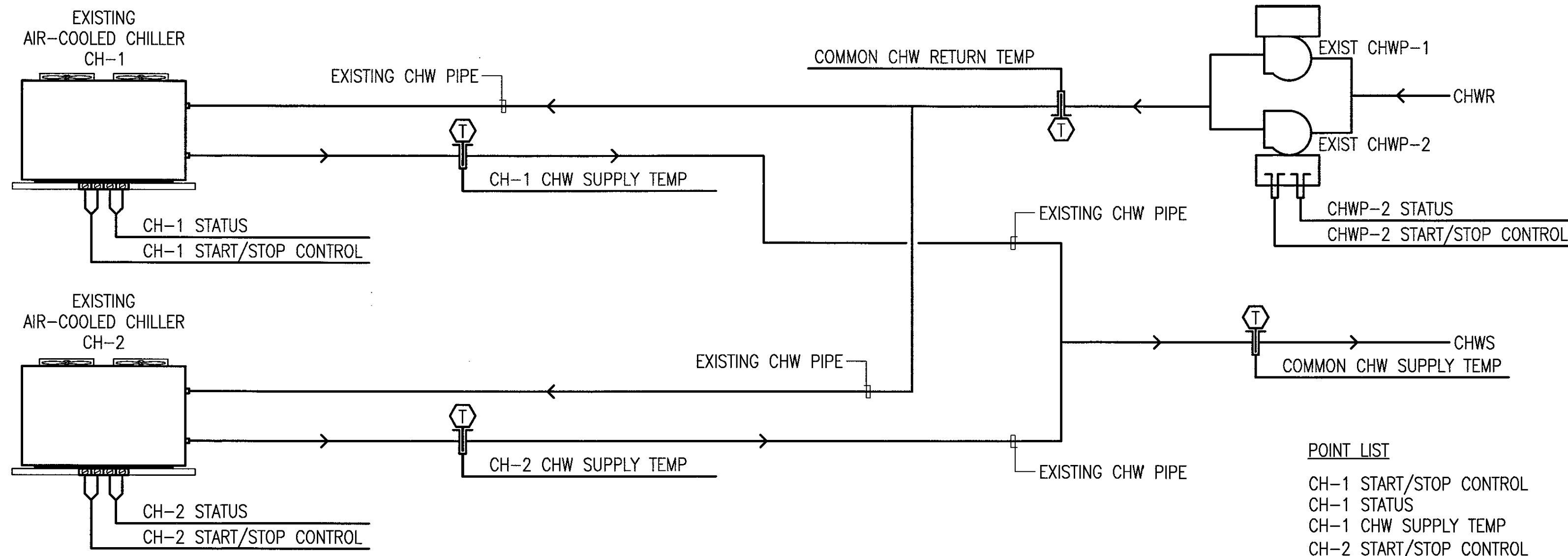
SCALE: M-103

SHEET 30 of 57



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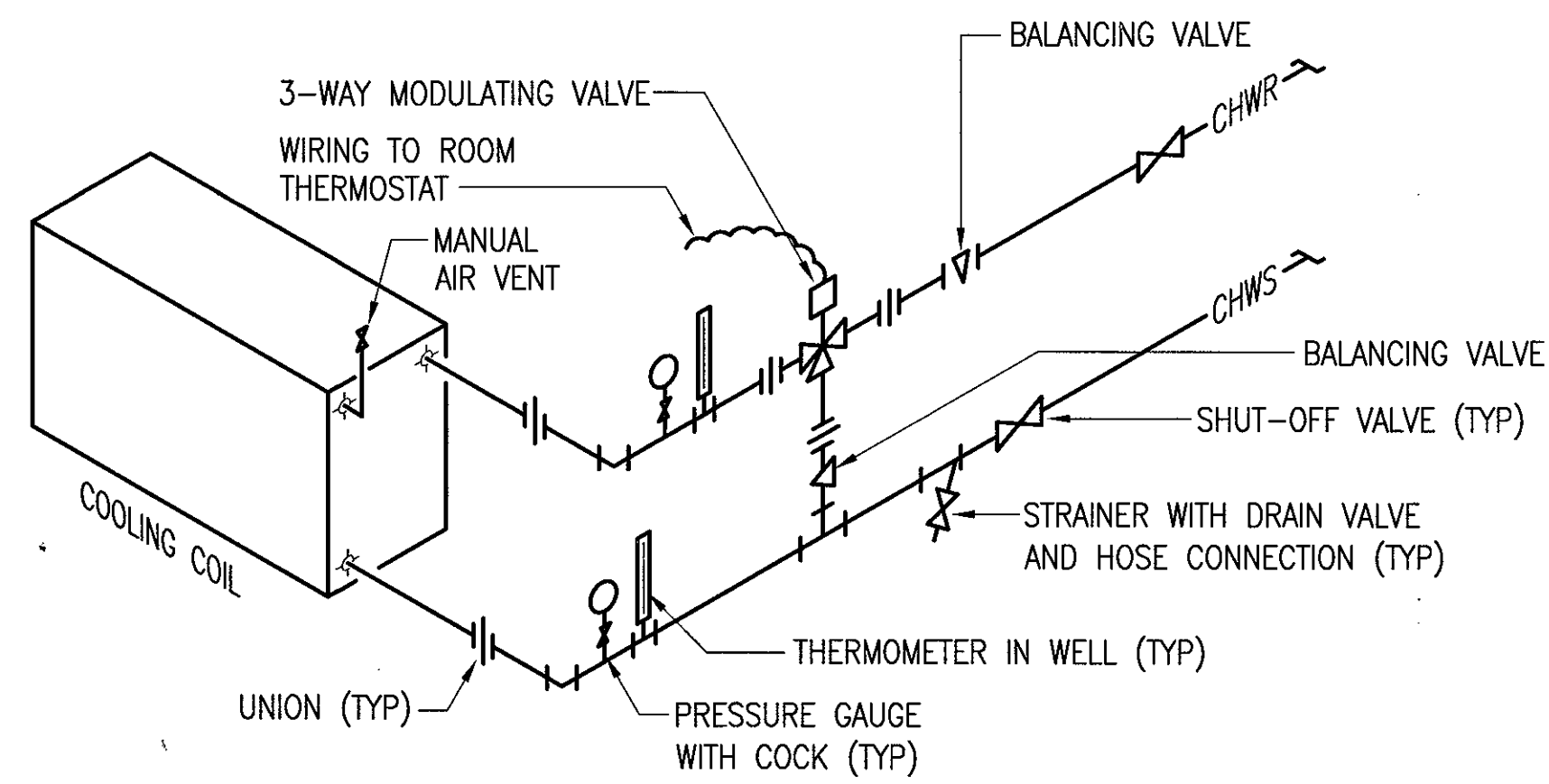
**NOTE:**  
 PROVIDE 1" CONDUIT TO EACH POINT  
 OBJECT FOR CONTROL WIRING.

- POINT LIST**
- CH-1 START/STOP CONTROL
  - CH-1 STATUS
  - CH-1 CHW SUPPLY TEMP
  - CH-2 START/STOP CONTROL
  - CH-2 STATUS
  - CH-2 CHW SUPPLY TEMP
  - COMMON CHWS TEMP
  - COMMON CHWR TEMP
  - CHWP-1 START/STOP CONTROL
  - CHWP-1 STATUS
  - CHWP-2 START/STOP CONTROL
  - CHWP-2 STATUS

**SEQUENCE OF OPERATION**

DISPLAY/KEYPAD TO ALLOW TIME SCHEDULES FOR CHILLER CONTROL. ON CHILLER START-UP, THE LEAD CHILLER WILL START AS PER THE TIME SCHEDULE. THE LAG CHILLERS WILL HAVE A TIME DELAY TO STOP FROM HAVING BOTH CHILLERS START AT THE SAME TIME. THE LAG CHILLER WILL START BASED ON THE COMMON CHW RETURN TEMPERATURE AFTER THE DELAY TIMES OUT (SETPOINT ADJUSTABLE). THE LEAD CHILLER WILL ALTERNATE WEEKLY.

1 CHILLER CONTROL DIAGRAM  
 M-301 NOT TO SCALE



2 COOLING COIL DIAGRAM  
 M-301 NOT TO SCALE

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 SIGNATURE: *Paul J. ...* DATE: 7/11/11

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

MALCOLM Y. MIYASHIRO  
 LICENSED PROFESSIONAL ENGINEER  
 No. 2465-M  
 HAWAII, U.S.A.

EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Malcolm Y. Miyashiro*

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DESIGNED: NA		BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE		
DRAWN: JT		CHILLER CONTROL DIAGRAM AND DETAILS		
SAFETY: --		DATE: JAN 31, 2011		
SECURITY: --		SCALE:		
APPROVED: 154 GP / BCE	APPROVED: 154 GP / CC	ENG # M-301		
APPROVED: HANG / CC	APPROVED: HANG / COE	SHEET 31 OF 57		
APPROVED: TAG - HAWAII	APPROVED: 154 CES / CEC PROJ ENGR			

# EQUIPMENT SCHEDULE

FAN COIL UNIT																						
MARK NO.	LOCATION	AREA SERVED	SYSTEM TYPE	FAN				COOLING COIL										MOTOR			UNIT WEIGHT (LBS)	REMARKS
				SA (CFM)	RA (CFM)	OA (CFM)	ESP (IN WG)	TOTAL CAPACITY (BTUH)	SENSIBLE CAPACITY (BTUH)	EAT (°F)		MIN COIL AREA (SF)	NO. OF ROWS	EWT (°F)	LWT (°F)	CHW FLOW RATE (GPM)	MAX PRESS DROP (FT)	NO.	HP	V/Ø/HZ		
										DB	WB											
FCU 1	RM 103A	RM 103A	CHILLED WATER	800	730	70	0.20	17,500	14,300	75.1	63.3	2.2	6	47	57	3.5	2.1	1	1/4	115/1/60	150	PROVIDE WITH 3-SPEED FAN AND WALL-MOUNTED CONTROLLER.
FCU 2	RM 103B	RM 103B	CHILLED WATER	1,000	900	100	0.20	24,700	19,400	75.2	63.5	2.7	6	47	57	4.5	1.1	1	1/3	115/1/60	170	PROVIDE WITH 3-SPEED FAN AND WALL-MOUNTED CONTROLLER.
FCU 3	RM 104	RM 104	CHILLED WATER	1,000	900	90	0.25	23,800	20,600	74.7	62.5	2.7	6	47	57	4.7	1.2	1	1/3	115/1/60	170	PROVIDE WITH 3-SPEED FAN AND WALL-MOUNTED CONTROLLER.

EXHAUST FAN											
MARK NO.	LOCATION	AREA SERVED	TYPE	DRIVE	FAN			MOTOR		SONES	REMARKS
					CAPACITY (CFM)	STATIC PRESS (IN H2O)	RPM	HP (AMPS)	V/Ø/HZ		
EF 1	GENERATOR ROOM	GENERATOR ROOM	INLINE CENTRIFUGAL	DIRECT	400	0.25	978	(3.1)	115/1/60	1.7	PROVIDE WITH SPEED CONTROLLER AND CONTROLLED VIA THERMOSTAT.

STORAGE TANK								
MARK NO.	LOCATION	TYPE	WIDTH (INCHES)	HEIGHT (INCHES)	LENGTH (INCHES)	CAPACITY (GALLONS)	UNIT WEIGHT (LBS)	REMARKS
ST 1	GRASS AREA	FUEL OIL	68	52	132	1,000	18,000	DOUBLE WALL TANK WITH CONCRETE JACKET. PROVIDE WITH STAIRS AND RAILING.

DAY TANK								
MARK NO.	LOCATION	SERVICE	CAPACITY (GALLONS)	SUPPLY PUMP (GPM)	RETURN PUMP (GPM)	HP	V/Ø/HZ	REMARKS
DT 1	GENERATOR BUILDING	GENERATOR FUEL SUPPLY	75	2	2	0.33 (EA)	115/1/60	DOUBLE WALL TANK WITH LEAK DETECTION SYSTEM AND DUPLEX PUMPS WITH CONTROLLER.

**BID ITEM #1**

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul J. Paul* 4/11/17  
 SIGNATURE DATE

RCD 2	A/C DESIGN IN ROOM 104	07/27/12		
REVISION NO	DESCRIPTION	DATE	BY	CHK'D

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

MALCOLM Y. MIYASHIRO  
 LICENSED PROFESSIONAL ENGINEER  
 No. 2465-W  
 HAWAII, U.S.A.

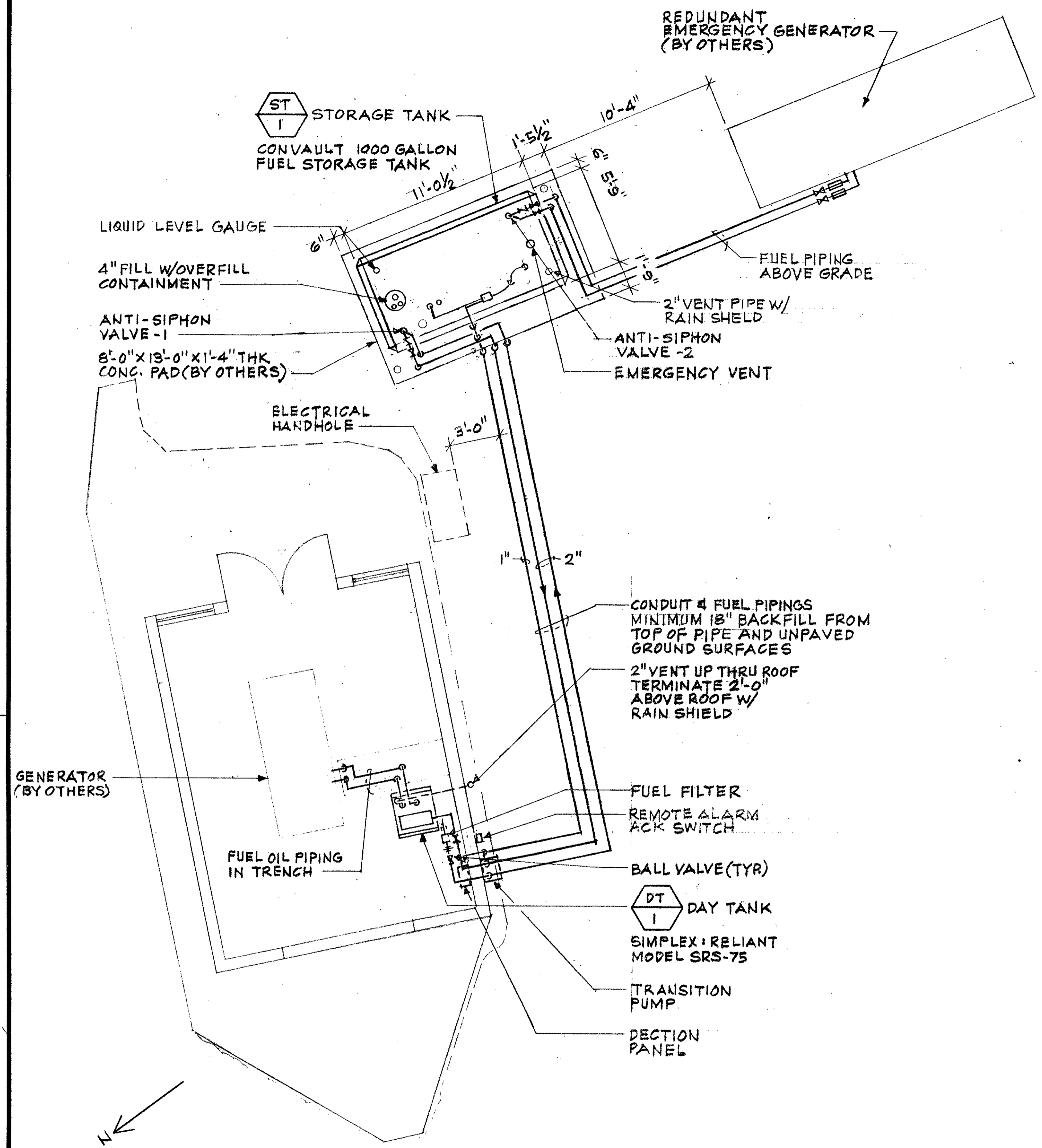
IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

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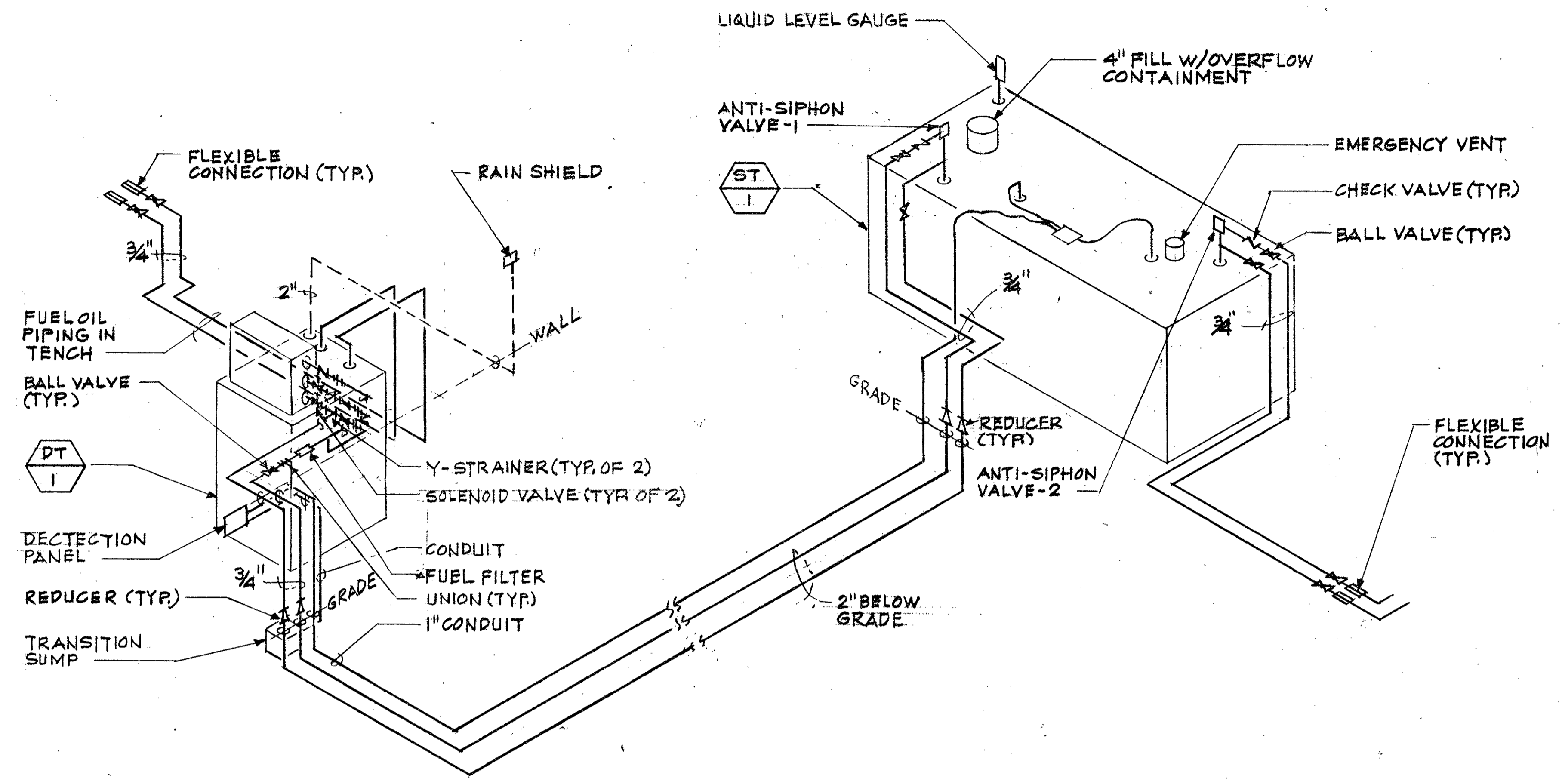
DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII			
DESIGNED:			
DRAWN:			
SAFETY:			
SECURITY:			
EQUIPMENT SCHEDULE			
APPROVED:	APPROVED:	DATE	
154 GP / SEE	154 GP / CC		
APPROVED:	APPROVED:	SCALE:	
HANG / CC	HANG / CC	DWG #	
APPROVED:	APPROVED:	SHEET	
TAG - HAWAII	154 GES / DEC PROJ ENGR	M-401 32 of	



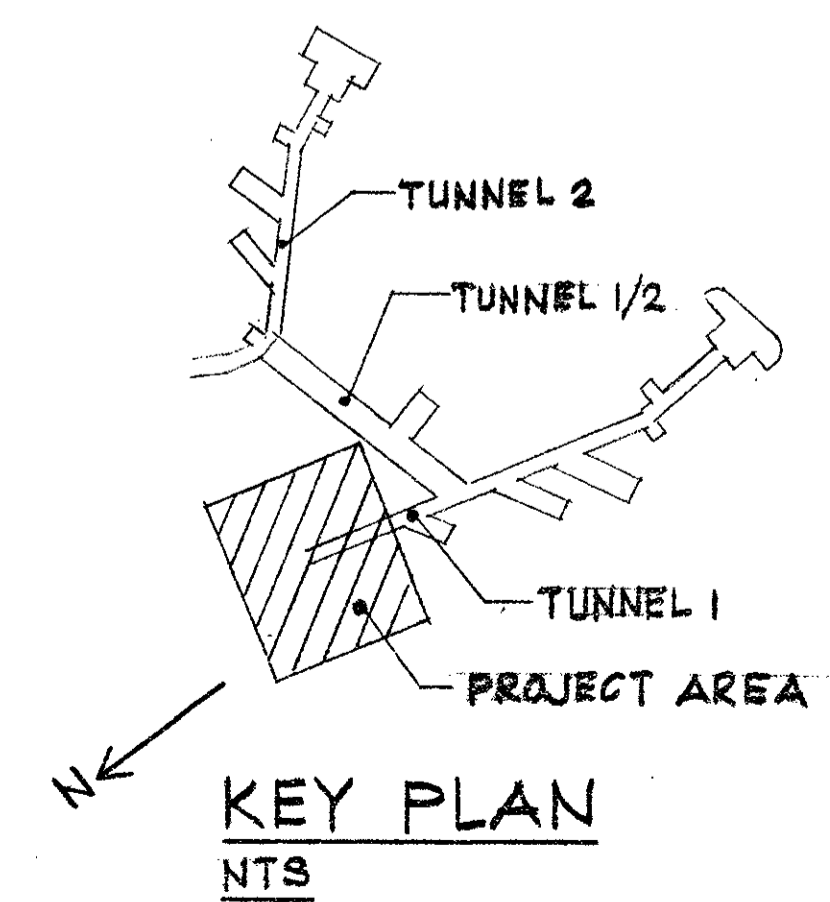
TUNNEL 1



**EMERGENCY GENERATOR AND FUEL TANK  
MECHANICAL FLOOR PLAN**  
SCALE: 1/4" = 1'-0" REF. SHT. M-103



**FUEL PIPING DIAGRAM**  
NOT TO SCALE REF. SHT. M-103



**KEY PLAN**  
NTS

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul J. Paul* 4/15/17  
SIGNATURE DATE

BATTERY 407 ELECTRICAL UPGRADE  
DIAMOND HEAD CRATER  
JOB NO.: CA-2917-C  
HONOLULU OAHU HAWAII  
EMERGENCY GENERATOR AND FUEL TANK MECHANICAL  
FLOOR PLAN, DIAGRAM, AND DETAIL  
GENERAL CONTRACTOR PAUL'S ELEC. CONTRACTING LLC  
SUBMITTED BY:  
OAHU PLUMBING & SHEET METAL, LTD.  
OAHU AIR CONDITIONING, CO.  
938 KOKOU ST. HONOLULU, HAWAII  
JOB No. 11096500 DATE 4/4/12 SHEET No P-1 OF 1

DATE 07/09/14  
AS BUILT DRAWING

**ELECTRICAL SYMBOL LIST / MOUNTING HEIGHT SCHEDULE**

MOUNTING HEIGHT FROM FLOOR TO (SPECIAL MOUNTING HEIGHTS INDICATED ON PLAN)				MOUNTING HEIGHT FROM FLOOR TO (SPECIAL MOUNTING HEIGHTS INDICATED ON PLAN)				MOUNTING HEIGHT FROM FLOOR TO (SPECIAL MOUNTING HEIGHTS INDICATED ON PLAN)						
TOP		SYMBOL		DESCRIPTION	TOP		SYMBOL		DESCRIPTION	TOP		SYMBOL		DESCRIPTION
TOP	CL	EXISTING	NEW		TOP	CL	EXISTING	NEW		TOP	CL	EXISTING	NEW	
		2		FLUORESCENT LUMINAIRE, CEILING MOUNTED, REPLACE LAMPS AND BALLAST AS INDICATED ON LUMINAIRE SCHEDULE (NUMERAL IN CIRCLE CORRESPONDS TO LUMINAIRE SCHEDULE)	6'-0"		[Symbol]	[Symbol]	TRANSFORMER, PAD OR FLOOR MOUNTED AS INDICATED			HIARNG	HAWAII ARMY NATIONAL GUARD	
		18		FLUORESCENT LUMINAIRE, WALL MOUNTED, REPLACE LAMPS AND BALLAST AS INDICATED ON LUMINAIRE SCHEDULE (NUMERAL IN CIRCLE CORRESPONDS TO LUMINAIRE SCHEDULE)	6'-0"		[Symbol]	[Symbol]	PANELBOARD			HP	HORSEPOWER	
			1	FLUORESCENT LUMINAIRE, CEILING MOUNTED (NUMERAL IN CIRCLE CORRESPONDS TO LUMINAIRE SCHEDULE)	6'-0"		[Symbol]	[Symbol]	ELECTRICAL EQUIPMENT			MH	MANHOLE	
			1	FLUORESCENT LUMINAIRE, WALL MOUNTED (NUMERAL IN CIRCLE CORRESPONDS TO LUMINAIRE SCHEDULE)			[Symbol]	[Symbol]	TELEPHONE BACKBOARD			KW	KILOWATT	
		16		INCANDESCENT LUMINAIRE, CEILING MOUNTED, REPLACE LAMP WITH FLUORESCENT LAMP WITH INTEGRAL BALLAST AS INDICATED ON LUMINAIRE SCHEDULE (NUMERAL IN CIRCLE CORRESPONDS TO LUMINAIRE SCHEDULE)			[Symbol]	[Symbol]	SIGNAL CABINET FOR SYSTEM NOTED			KWH	KILOWATT-HOUR	
			1	LUMINAIRE, CEILING MOUNTED (NUMERAL IN CIRCLE CORRESPONDS TO LUMINAIRE SCHEDULE)			[Symbol]	[Symbol]	EQUIPMENT TERMINATION WITH FLEXIBLE CONDUIT WHIP			MTS	MANUAL TRANSFER SWITCH	
			1	LUMINAIRE, WALL MOUNTED (NUMERAL IN CIRCLE CORRESPONDS TO LUMINAIRE SCHEDULE)			[Symbol]	[Symbol]	POWER TRANSFORMER			NF	NON-FUSED	
				ILLUMINATED EXIT SIGN, WALL MOUNTED, DIRECTIONAL ARROWS AS INDICATED			[Symbol]	[Symbol]	GROUND			NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION	
				ILLUMINATED EXIT SIGN, CEILING MOUNTED, DIRECTIONAL ARROWS AS INDICATED			[Symbol]	[Symbol]	GROUND			PNL	PANELBOARD	
				EMERGENCY LUMINAIRE, WALL MOUNTED, UNLESS OTHERWISE NOTED			[Symbol]	[Symbol]	PRIMARY FUSED SWITCH			RCPT	RECEPTACLE	
				ILLUMINATED EXIT SIGN, WALL MOUNTED, DIRECTIONAL ARROWS AS INDICATED			[Symbol]	[Symbol]	ELBOW TYPE HIGH VOLTAGE CONNECTOR			SS	STAINLESS STEEL	
				ILLUMINATED EXIT SIGN, CEILING MOUNTED, DIRECTIONAL ARROWS AS INDICATED			[Symbol]	[Symbol]	CIRCUIT BREAKER			SW	SWITCH	
				EMERGENCY LUMINAIRE, WALL MOUNTED, UNLESS OTHERWISE NOTED			[Symbol]	[Symbol]	CURRENT TRANSFORMER			WP	WEATHERPROOF	
				EMERGENCY LUMINAIRE, WALL MOUNTED, UNLESS OTHERWISE NOTED			[Symbol]	[Symbol]	AUTOMATIC TRANSFER/ISOLATION BYPASS SWITCH			XLP	CROSS-LINKED POLYETHYLENE	
				EMERGENCY LUMINAIRE, WALL MOUNTED, UNLESS OTHERWISE NOTED			[Symbol]	[Symbol]	AUTOMATIC TRANSFER/ISOLATION BYPASS SWITCH			Denotes Demolition/Removal		
				EMERGENCY LUMINAIRE, WALL MOUNTED, UNLESS OTHERWISE NOTED			[Symbol]	[Symbol]	AUTOMATIC TRANSFER/ISOLATION BYPASS SWITCH			HOMERUN ARROW TO PANELBOARD. LETTER INDICATES PANELBOARD, NUMBERS INDICATES CIRCUITS. (HASHMARKS INDICATES 3-WIRES WITHIN, ALL OTHERS SIMILAR)		
				EMERGENCY LUMINAIRE, WALL MOUNTED, UNLESS OTHERWISE NOTED			[Symbol]	[Symbol]	AUTOMATIC TRANSFER/ISOLATION BYPASS SWITCH			SAWCUT ROADWAY/SIDEWALK. REPAIR TO MATCH EXISTING		
46"		\$	\$	LIGHT SWITCH, FLUSH WALL MOUNTED, 1P20A, 120/277V, 1HP MAX. (LETTER INDICATES LUMINAIRE CONTROLLED)			[Symbol]	[Symbol]	TRANSFER SWITCH				INTERIOR WORK: CONCEALED CONDUIT IN FINISHED FLOOR OR BELOW GRADE (NO HASHMARKS INDICATE 2 CURRENT CARRYING CONDUCTORS AND 1 GROUND CONDUCTOR WITHIN, UNLESS OTHERWISE INDICATED).	
46"		\$3	\$3	THREE WAY SWITCH, 20A, 120/277V			[Symbol]	[Symbol]	DIESEL ENGINE GENERATOR SET				EXTERIOR WORK: CONCRETE ENCASED UNDERGROUND DUCT LINE, SEE DUCT SECTION INDICATOR AND SCHEDULE.	
			\$M	MANUAL MOTOR STARTER WITH THERMAL OVERLOAD (SINGLE POLE) 1HP MAX.	7'-6"		[Symbol]	[Symbol]	METER SOCKET					
				OCCUPANCY SENSOR HEAD, CEILING MOUNTED			[Symbol]	[Symbol]	SECURITY CAMERA				EXPOSED RACEWAY, PROVIDE SUPPORTS AT 8'-0" ON CENTER MAXIMUM	
18"				RECEPTACLE, DUPLEX, GROUNDING TYPE, 125V, NEMA TYPE 5-20R			[Symbol]	[Symbol]	MANHOLE				EXPOSED TELEPHONE CONDUIT, 1" MINIMUM, WITH PULL-CORD, WIRING BY THE GOVERNMENT	
18"				RECEPTACLE, DUPLEX, GFCI TYPE, 125V, NEMA TYPE 5-20R			[Symbol]	[Symbol]					LIQUID-TIGHT FLEXIBLE CONDUIT	
18"				RECEPTACLE, QUADRUPLX, GFCI TYPE, 125V, NEMA TYPE 5-20R			[Symbol]	[Symbol]					CABLE TRAY, SIZE NOTED ON PLAN	
18"				RECEPTACLE, QUADRUPLX, GROUNDING TYPE, 125V, NEMA TYPE 5-20R			[Symbol]	[Symbol]					CONDUIT STUB, 3/4" MINIMUM CONDUIT UNLESS OTHERWISE NOTED	
18"				RECEPTACLE, SPECIAL PURPOSE, NEMA CONFIGURATION AS NOTED			[Symbol]	[Symbol]						
18"				TELEPHONE OUTLET, PROVIDE BLANK COVER PLATE			[Symbol]	[Symbol]					NOTE INDICATOR	
		J	J	JUNCTION BOX, LARGE, WALL MOUNTED			[Symbol]	[Symbol]					DETAIL INDICATOR: TOP HALF DENOTES DETAIL NUMBER, BOTTOM HALF DENOTES SHEET NUMBER	
		J	J	JUNCTION BOX, WALL MOUNTED			[Symbol]	[Symbol]						
		J	J	JUNCTION BOX, CEILING MOUNTED			[Symbol]	[Symbol]						
5'-0"				NON-FUSED DISCONNECT SWITCH, 3P30A UNLESS OTHERWISE NOTED, VOLTAGE TO MATCH CIRCUITING			[Symbol]	[Symbol]					POLE LIGHT ASSEMBLY	
5'-0"				ENCLOSED CIRCUIT BREAKER			[Symbol]	[Symbol]						

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 Signature: [Signature] DATE: 7/11/14

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.  
 TIMOTHY S. HIGA  
 LICENSED PROFESSIONAL ENGINEER  
 No. 5791-E HAWAII, U.S.A.  
 6-30-11 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
 Signature: [Signature]

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY  
 The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

REVISION NO.	DESCRIPTION	DATE	BY	CHK'D

DESIGNED: BS  
 DRAWN: KL  
 CHECKED: [ ]  
 SECURED: [ ]

APPROVED: [ ] DATE: JAN 31, 2011  
 154 OP / ICE  
 APPROVED: [ ]  
 154 OP / CC  
 APPROVED: [ ]  
 154 OP / ODE  
 APPROVED: [ ]  
 154 OES / ODE PROJ ENGR

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

ELECTRICAL SYMBOL LIST

SCALE: AS SHOWN  
 SHEET: E-1 OF 57

**GENERAL ELECTRICAL NOTES:**

1. ALL ELECTRICAL ITEMS INDICATED ON THE DRAWINGS ARE NEW AND SHALL BE PROVIDED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
2. ALL CONDUIT ROUTING AND JUNCTION BOX LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL ROUTE CONDUITS AND MOUNT JUNCTION BOXES IN A LOGICAL AND CONSTRUCTIBLE MANNER. EXPOSED CONDUITS SHALL BE ROUTED PARALLEL AND/OR PERPENDICULAR TO EXISTING ARCHITECTURAL AND STRUCTURAL ELEMENTS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK AND TO INSURE THE INSTALLATION OF ALL WORK WITHIN THE AVAILABLE SPACE. NOTIFY THE CONTRACTING OFFICER OF ALL QUESTIONS IN WRITING AND RESOLVE ALL CONTRACTOR'S QUESTIONS AND CONCERNS PRIOR TO PROCUREMENT AND BEFORE START OF CONSTRUCTION.
4. ALL WALLS, CEILINGS AND FLOORS ARE CONCRETE UNLESS OTHERWISE NOTED. PATCH, SEAL AND PAINT ALL PENETRATIONS TO MATCH EXISTING SURFACES. PATCH, SEAL AND PAINT ALL BUILDING SURFACES AND UNUSED WALL/FLOOR PENETRATIONS RESULTING FROM REMOVAL OF EXISTING ELECTRICAL EQUIPMENT AND APPARATUS.
5. PAINT ALL EXPOSED JUNCTION BOXES, EXPOSED CONDUITS, FITTINGS AND INSTALLATION HARDWARE TO MATCH SURROUNDING FINISHES UNLESS SPECIFICALLY INDICATED OTHERWISE.
6. TONING: EXISTING UNDERGROUND UTILITY LINES INDICATED ON DRAWINGS ARE SHOWN IN APPROXIMATE LOCATIONS BASED UPON BEST AVAILABLE "RECORD" DRAWINGS ON FILE AND ARE SUBJECT TO FIELD VERIFICATION BY THE CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR TONING THE ROUTES OF THE PROPOSED DUCTLINES TO IDENTIFY ANY POTENTIAL CONFLICTS PRIOR TO EXCAVATION. DAMAGE TO EXISTING UTILITIES CAUSED BY THE CONTRACTOR AS A RESULT OF THE FAILURE TO TONE THE ROUTE PRIOR TO EXCAVATION WORK, WILL REQUIRE THE CONTRACTOR TO REPAIR THE DAMAGE AT NO COST TO THE STATE, TO ITS ORIGINAL WORKING CONDITION AND THE SATISFACTION OF THE CONTRACTING OFFICER.
7. EXISTING ELECTRICAL DISTRIBUTION SYSTEM MUST REMAIN OPERATIONAL THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL EXERCISE DUE CARE AND CAUTION WHEN WORKING NEAR ANY EXISTING CABLING AND/OR EQUIPMENT. ANY DAMAGE TO THE EXISTING CABLING AND/OR EQUIPMENT RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE IMMEDIATELY REPAIRED OR RESTORED TO ITS ORIGINAL WORKING CONDITION AND AS DIRECTED BY THE CONTRACTING OFFICER AT THE CONTRACTOR'S EXPENSE.
8. THE CONTRACTOR SHALL SCHEDULE ALL WORK TO MINIMIZE DISRUPTION TO THE EXISTING FACILITY OPERATIONS. CONTRACTOR SHALL COORDINATE SCHEDULING AND ACCESS REQUIREMENTS WITH CONTRACTING OFFICER PRIOR TO COMMENCING WORK.
9. CONTRACTOR SHALL SEQUENCE WORK TO MINIMIZE THE NUMBER AND DURATION OF ELECTRICAL OUTAGES TO THE FACILITY. CONTRACTOR SHALL SUBMIT WRITTEN NOTICE OF SCHEDULED OUTAGES TO CONTRACTING OFFICER AT LEAST 21 DAYS IN ADVANCE.
10. ANY DAMAGE INFLICTED ON THE EXISTING FACILITIES AS A RESULT OF THE CONTRACTOR'S OPERATION SHALL BE IMMEDIATELY REPAIRED, AT NO COST TO THE STATE. REPAIRS TO FACILITIES SHALL BE TO EXISTING OR BETTER CONDITION AND TO THE SATISFACTION OF THE CONTRACTING OFFICER.
11. ALL EQUIPMENT CONNECTION LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE EXACT LOCATIONS OF ALL EQUIPMENT CONNECTIONS AND CONDUIT STUB-UPS WITH THE EQUIPMENT BEING FURNISHED. ANY REWORK AS A RESULT OF THE CONTRACTOR'S LACK OF COORDINATION WITH THE EQUIPMENT PROVIDER SHALL BE DONE AT NO COST TO THE STATE.
12. PROVIDE KNOCKOUT PLUGS FOR ALL UNUSED CONDUIT PENETRATIONS DUE TO CONDUIT REMOVAL AT EXISTING ELECTRICAL ENCLOSURES.
13. PHASING OF THE ELECTRICAL WORK IS REQUIRED.
  - a. THE EXISTING ELECTRICAL SYSTEM SHALL REMAIN IN OPERATION UNTIL THE NEW ELECTRICAL SYSTEM HAS BEEN CONNECTED TO REMAINING EXISTING ELECTRICAL SYSTEMS AND THE NEW/REMAINING ELECTRICAL SYSTEM IS IN OPERATION.
  - b. THE EXISTING 60KW GENERATOR IN THE EXISTING GENERATOR BUILDING SHALL REMAIN IN OPERATION AND CONNECTED TO THE EXISTING ELECTRICAL SYSTEM UNTIL THE NEW GENERATOR "A" (IN NEW BUILDING) AND NEW ELECTRICAL SYSTEM IS IN OPERATION.
14. VERIFY RATINGS OF ALL ELECTRICALLY OPERATED OR CONTROLLED EQUIPMENT PROVIDED BY THE GOVERNMENT AND/OR BY OTHER TRADES. COORDINATE RATINGS OF OVERCURRENT EQUIPMENT, DEVICES, DISCONNECT SWITCHES, CONDUIT AND WIRING, TO MATCH THE ACTUAL EQUIPMENT SUPPLIED, AT NO ADDITIONAL COST TO THE STATE.
15. ALL CONTROL DEVICES, CONTROL CONDUIT, CONTROL WIRING AND SEPARATELY ENCLOSED MOTOR STARTERS ARE PROVIDED UNDER APPLICABLE SPECIFICATION SECTIONS. ALL POWER TO ELECTRICALLY OPERATED EQUIPMENT PROVIDED UNDER ELECTRICAL SPECIFICATIONS.

CITY AND COUNTY OF HONOLULU  
REVISED ORDINANCE CHAPTER 32,  
HONOLULU COUNTY CODE 1990, AS AMENDED

To the best of my knowledge, this project's design substantially conforms to the Building Energy Conservation Code for:

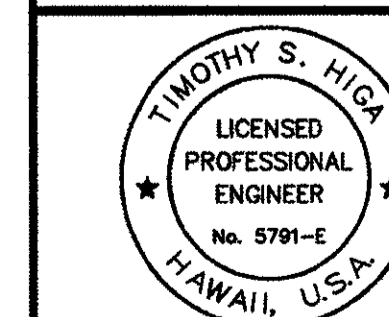
- Building Component Systems
- Electrical Component Systems
- Mechanical Component Systems

Signature: \_\_\_\_\_ Date: JAN. 31, 2011  
Name: TIMOTHY S. HIGA  
Title: ELECTRICAL ENGINEER  
License No.: 5791-E

IF SHEET IS LESS THAN  
22 x 34  
IT IS A REDUCED PRINT-  
SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

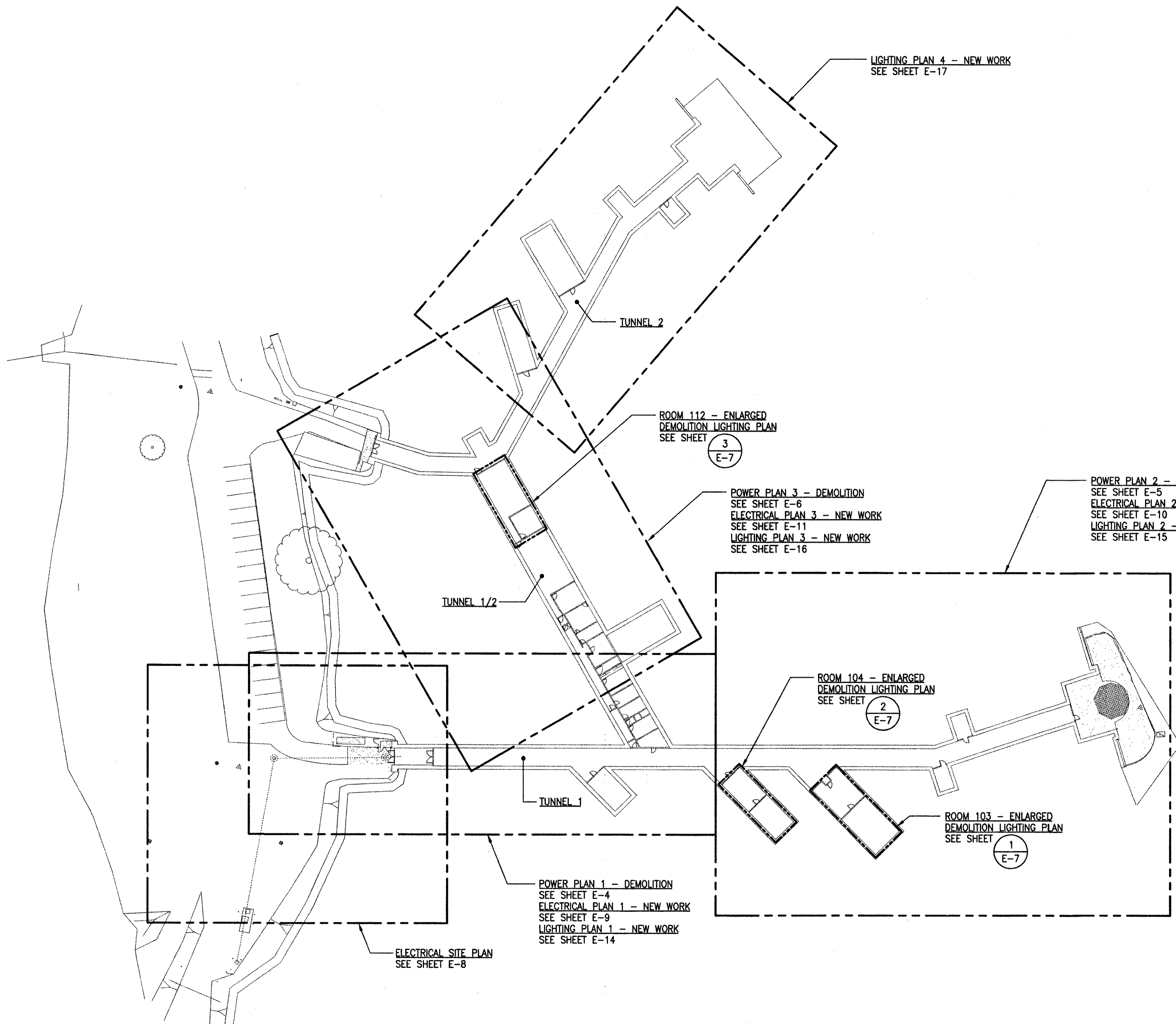


6-30-11 EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*T. Higa*

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul A. Paul* 7/11/14  
SIGNATURE DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

DESIGNED: BS		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DRAWN: KL		BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE	
SAFETY:		GENERAL ELECTRICAL NOTES	
SECURITY:		DATE: JAN 31, 2011	
APPROVED:	APPROVED:	SCALE: AS SHOWN	DRG #
154 OP / BCE	154 OP / OC	E-2	
APPROVED:	APPROVED:	SHEET	34 of 57
154 / CD	154 / CD		
APPROVED:	APPROVED:		
154 - HAWAII	154 CD / CD PROJ ENGR		



LIGHTING PLAN 4 - NEW WORK  
SEE SHEET E-17

TUNNEL 2

ROOM 112 - ENLARGED  
DEMOLITION LIGHTING PLAN  
SEE SHEET

3  
E-7

POWER PLAN 3 - DEMOLITION  
SEE SHEET E-6  
ELECTRICAL PLAN 3 - NEW WORK  
SEE SHEET E-11  
LIGHTING PLAN 3 - NEW WORK  
SEE SHEET E-16

POWER PLAN 2 - DEMOLITION  
SEE SHEET E-5  
ELECTRICAL PLAN 2 - NEW WORK  
SEE SHEET E-10  
LIGHTING PLAN 2 - NEW WORK  
SEE SHEET E-15

TUNNEL 1/2

ROOM 104 - ENLARGED  
DEMOLITION LIGHTING PLAN  
SEE SHEET

2  
E-7

ROOM 103 - ENLARGED  
DEMOLITION LIGHTING PLAN  
SEE SHEET

1  
E-7

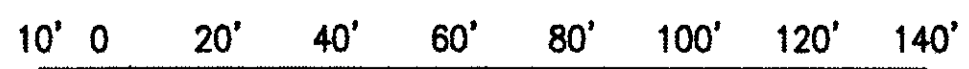
TUNNEL 1

POWER PLAN 1 - DEMOLITION  
SEE SHEET E-4  
ELECTRICAL PLAN 1 - NEW WORK  
SEE SHEET E-9  
LIGHTING PLAN 1 - NEW WORK  
SEE SHEET E-14

ELECTRICAL SITE PLAN  
SEE SHEET E-8

**1**  
**E-3** **OVERALL ELECTRICAL PLAN**  
SCALE: 1/32" = 1'-0"

**GRAPHIC SCALE**



1/32" = 1'-0"

IF SHEET IS LESS THAN  
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SCALE REDUCED ACCORDINGLY

The Contractor will be responsible  
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to avoid conflicts and to insure  
the installation of all work within  
the available space.

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul S. Higa* DATE: *1/31/11*

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

6-30-11 EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME  
OR UNDER MY SUPERVISION  
*Timothy S. Higa*

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: RP  
DRAWN: KL  
SAFETY:   
SECURITY:   
APPROVED:   
154 GP / ICE  
APPROVED:   
154 GP / CC  
APPROVED:   
154 CES / GEC PROJ ENGR

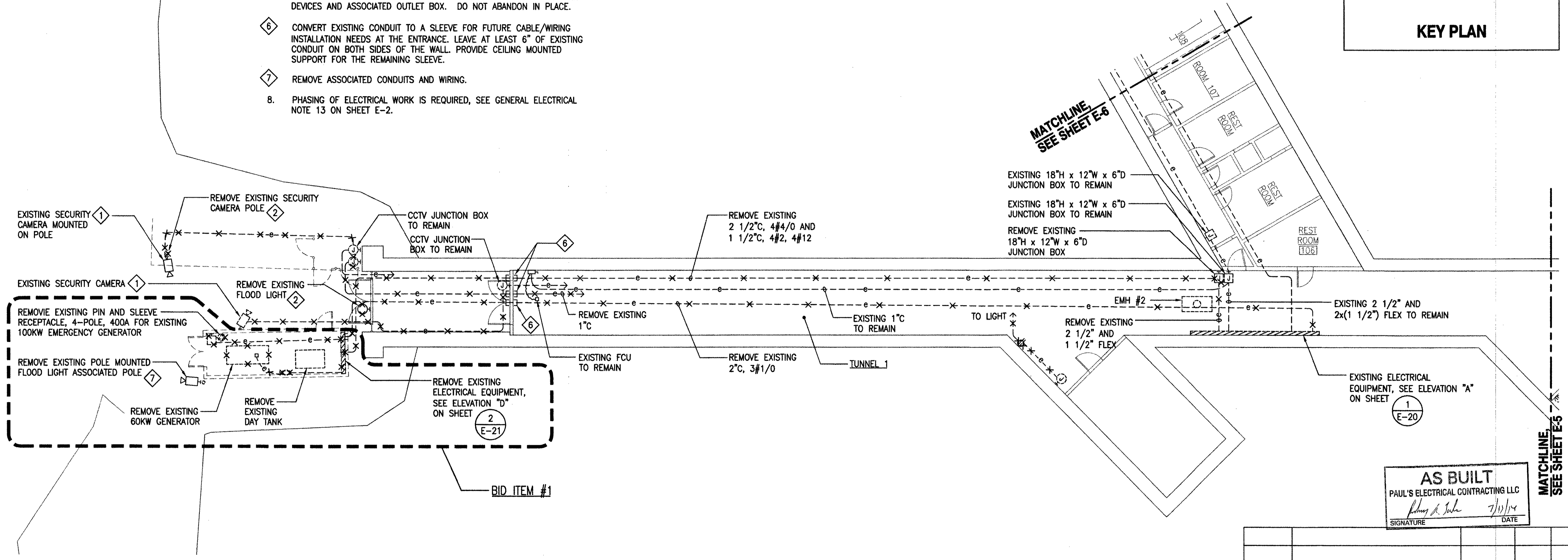
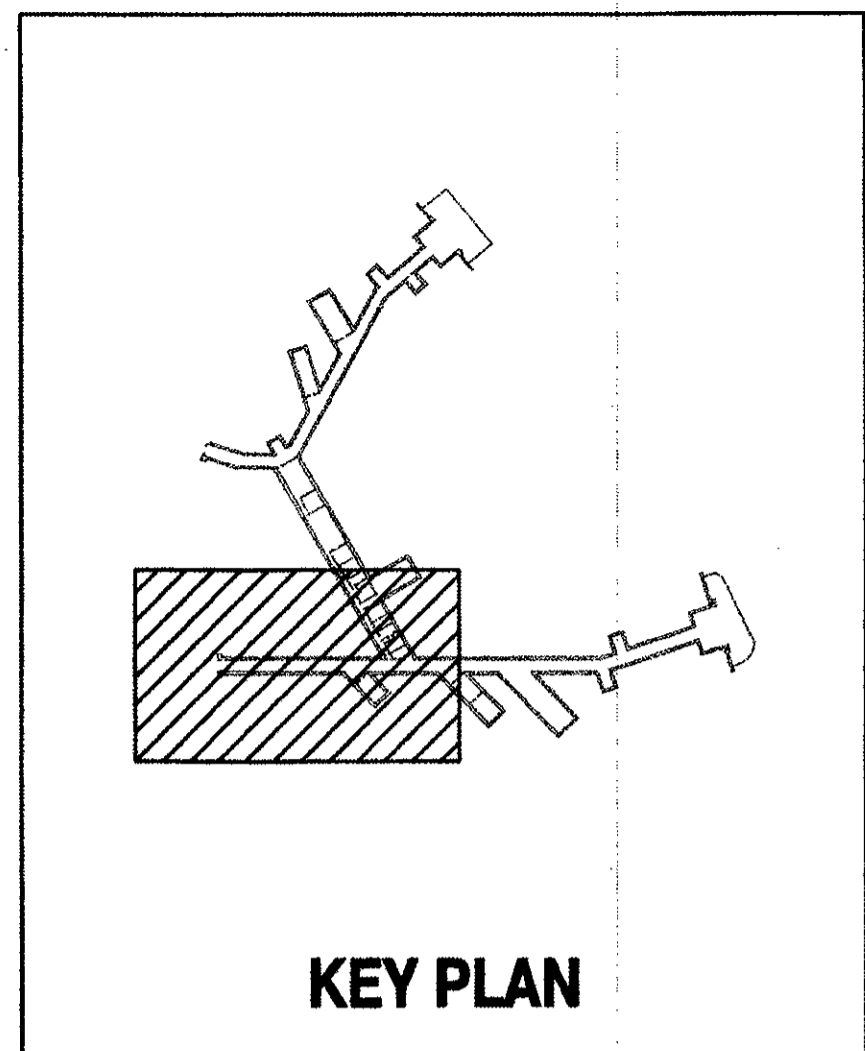
BLDG 407 (BATTERY 407) ELECTRICAL  
UPGRADE

OVERALL ELECTRICAL PLAN

DATE: JAN 31, 2011  
SCALE: AS SHOWN  
SHEET: E-3  
35 of 57

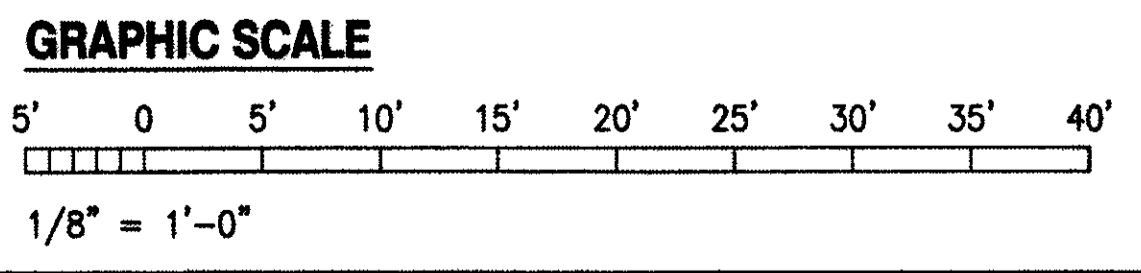
**NOTES:**

1. EXISTING SECURITY CAMERA AND CABLES TO BE REMOVED BY THE GOVERNMENT.
2. COORDINATE REMOVAL WITH CONTRACTING OFFICER.
3. UNLESS NOTED OTHERWISE, REMOVE ALL EXPOSED CONDUITS AND CONDUCTORS ASSOCIATED WITH ELECTRICAL EQUIPMENT AND DEVICES INDICATED TO BE DEMOLISHED. DO NOT ABANDON IN PLACE. WHERE CONDUIT STUBS UP FROM BELOW GRADE OR FLOOR, REMOVE CONDUITS TO 12" BELOW GRADE FOR EXTERIOR LOCATIONS AND 2" BELOW FINISH FLOOR FOR INTERIOR LOCATIONS. PATCH AND RESTORE FLOOR TO BE FLUSH WITH AND MATCH EXISTING CONCRETE FLOOR.
4. FOR CONDUCTORS INDICATED TO BE REMOVED THAT ARE IN CONCEALED CONDUITS IN WALLS OR ABOVE INACCESSIBLE CEILINGS, CAP CONDUIT AND ABANDON CONDUIT IN-PLACE.
5. PROVIDE BLANK COVER PLATE OVER EXISTING FLUSH OUTLET BOX FOR DEVICES INDICATED TO BE DEMOLISHED. REMOVE ALL SURFACE MOUNTED DEVICES AND ASSOCIATED OUTLET BOX. DO NOT ABANDON IN PLACE.
6. CONVERT EXISTING CONDUIT TO A SLEEVE FOR FUTURE CABLE/WIRING INSTALLATION NEEDS AT THE ENTRANCE. LEAVE AT LEAST 6" OF EXISTING CONDUIT ON BOTH SIDES OF THE WALL. PROVIDE CEILING MOUNTED SUPPORT FOR THE REMAINING SLEEVE.
7. REMOVE ASSOCIATED CONDUITS AND WIRING.
8. PHASING OF ELECTRICAL WORK IS REQUIRED, SEE GENERAL ELECTRICAL NOTE 13 ON SHEET E-2.



**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 Signature: [Signature] DATE: 7/10/11

**1 ELECTRICAL PLAN 1 - DEMOLITION**  
 E-4 SCALE: 1/8" = 1'-0"



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RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

TIMOTHY S. HIGA  
 LICENSED PROFESSIONAL ENGINEER  
 No. 5791-E  
 HAWAII, U.S.A.

6-30-11 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
 Signature: [Signature]

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: RP  
 DRAWN: KL  
 CHECKED: [Blank]  
 SECURITY: [Blank]

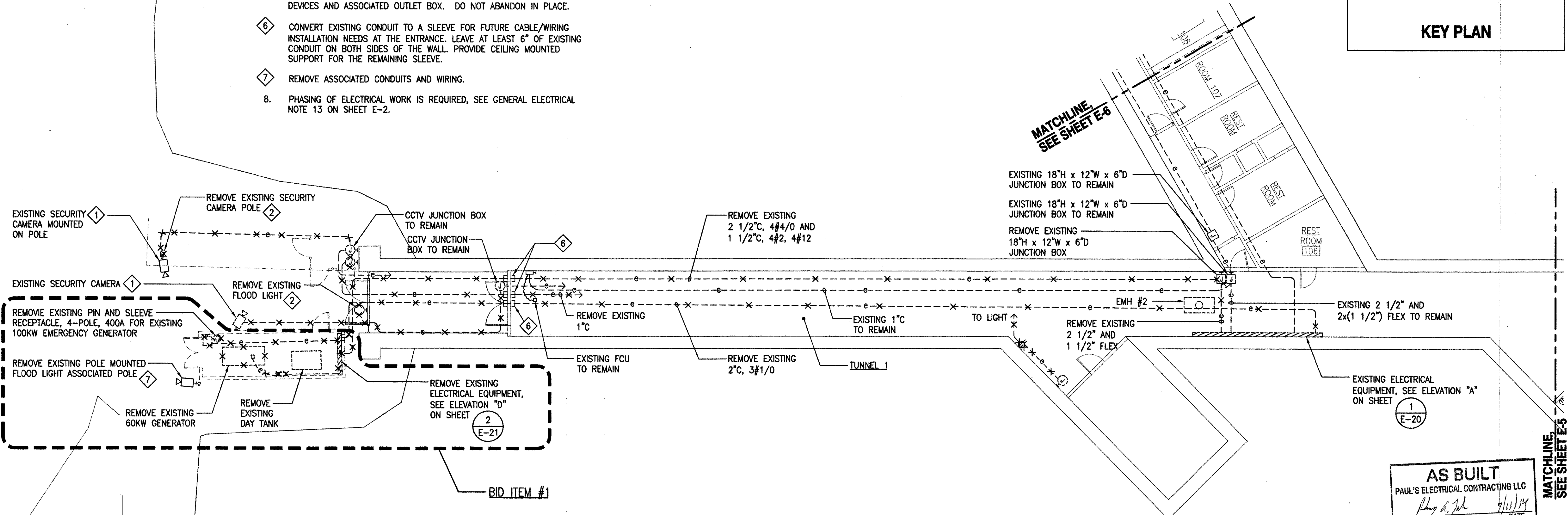
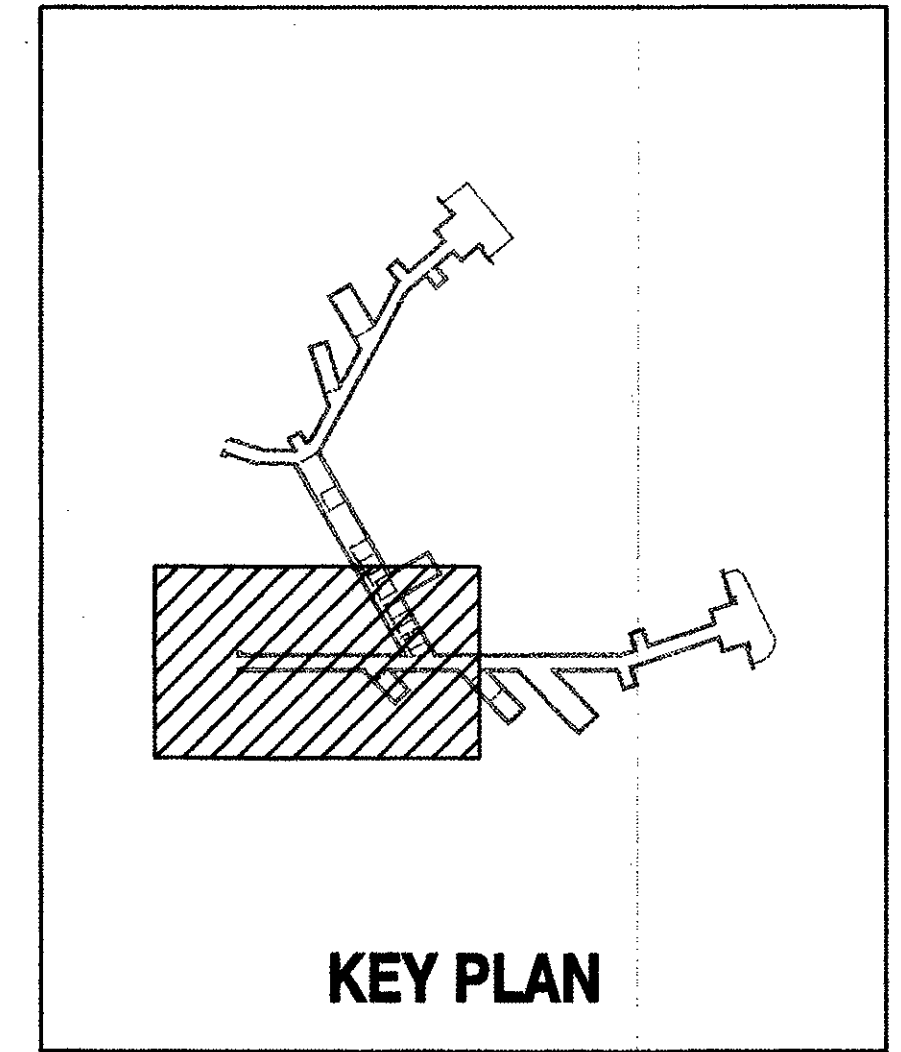
BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

ELECTRICAL PLAN 1 - DEMOLITION

APPROVED: [Signature]	APPROVED: [Signature]	DATE: JAN 31, 2011
154 GP / ACE	154 GP / CC	SCALE: AS SHOWN
APPROVED: [Signature]	APPROVED: [Signature]	DWG / E-4
154 GP / CC	154 GP / CC	SHEET 36 of 57

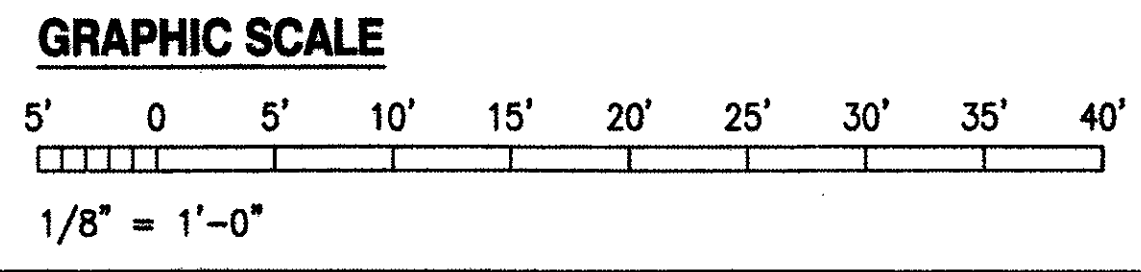
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4. FOR CONDUCTORS INDICATED TO BE REMOVED THAT ARE IN CONCEALED CONDUITS IN WALLS OR ABOVE INACCESSIBLE CEILINGS, CAP CONDUIT AND ABANDON CONDUIT IN-PLACE.
5. PROVIDE BLANK COVER PLATE OVER EXISTING FLUSH OUTLET BOX FOR DEVICES INDICATED TO BE DEMOLISHED. REMOVE ALL SURFACE MOUNTED DEVICES AND ASSOCIATED OUTLET BOX. DO NOT ABANDON IN PLACE.
6. CONVERT EXISTING CONDUIT TO A SLEEVE FOR FUTURE CABLE/WIRING INSTALLATION NEEDS AT THE ENTRANCE. LEAVE AT LEAST 6" OF EXISTING CONDUIT ON BOTH SIDES OF THE WALL. PROVIDE CEILING MOUNTED SUPPORT FOR THE REMAINING SLEEVE.
7. REMOVE ASSOCIATED CONDUITS AND WIRING.
8. PHASING OF ELECTRICAL WORK IS REQUIRED, SEE GENERAL ELECTRICAL NOTE 13 ON SHEET E-2.



**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 SIGNATURE: *Paul S. Higa* DATE: 7/10/14

**1 ELECTRICAL PLAN 1 - DEMOLITION**  
 E-4 SCALE: 1/8" = 1'-0"



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**RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.**

**TIMOTHY S. HIGA**  
 LICENSED PROFESSIONAL ENGINEER  
 No. 5791-E  
 HAWAII, U.S.A.

6-30-11 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Higa*

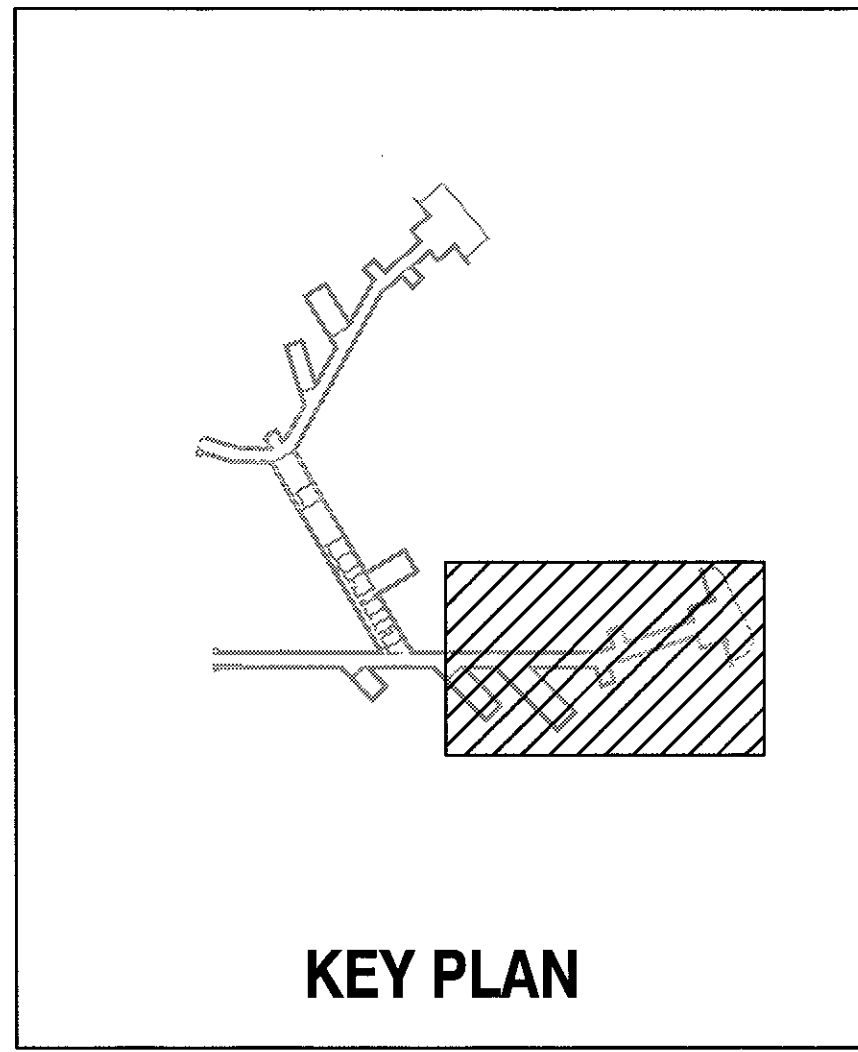
REVISION NO.	DESCRIPTION	DATE	BY	CHK'D

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

ELECTRICAL PLAN 1 - DEMOLITION

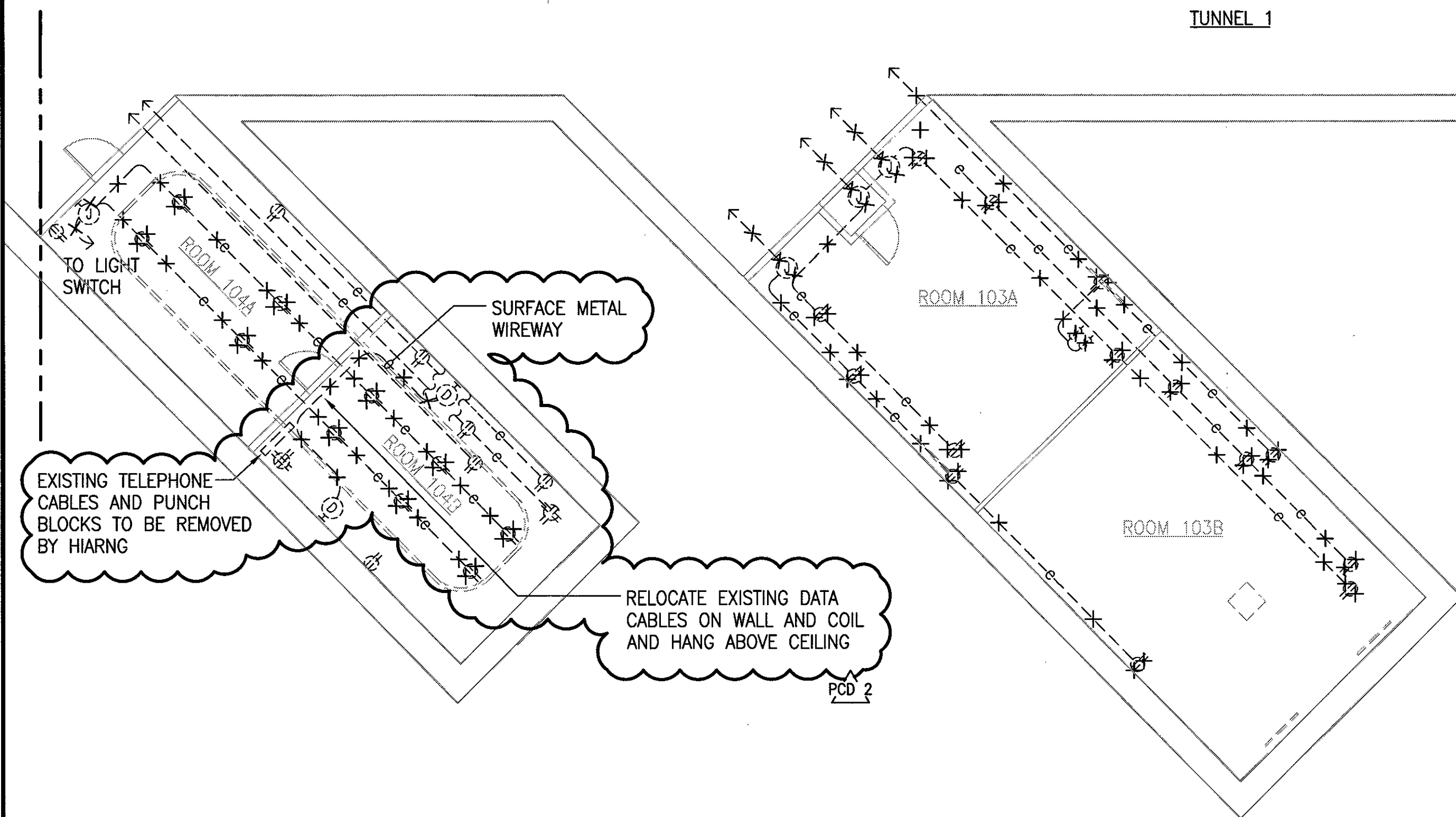
DESIGNED: RP	DATE: JAN 31, 2011
DRAWN: KL	SCALE: AS SHOWN
SECURITY:	DATE: E-4
APPROVED: [Signature]	DATE: 36 of 57



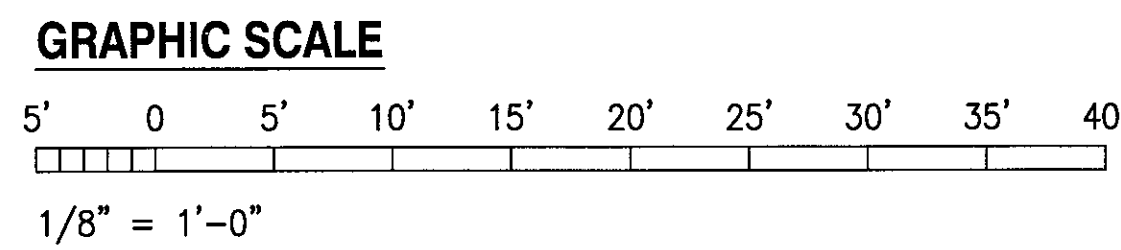
**NOTES:**

1. UNLESS NOTED OTHERWISE, REMOVE ALL EXPOSED CONDUITS AND CONDUCTORS ASSOCIATED WITH ELECTRICAL EQUIPMENT AND DEVICES INDICATED TO BE DEMOLISHED. DO NOT ABANDON IN PLACE. WHERE CONDUIT STUBS UP FROM BELOW GRADE OR FLOOR, REMOVE CONDUITS TO 12" BELOW GRADE FOR EXTERIOR LOCATIONS AND 2" BELOW FINISH FLOOR FOR INTERIOR LOCATIONS. PATCH AND RESTORE FLOOR TO BE FLUSH WITH AND MATCH EXISTING CONCRETE FLOOR.
2. FOR CONDUCTORS INDICATED TO BE REMOVED THAT ARE IN CONCEALED CONDUITS IN WALLS OR ABOVE INACCESSIBLE CEILINGS, CAP CONDUIT AND ABANDON CONDUIT IN-PLACE.
3. PROVIDE BLANK COVER PLATE OVER EXISTING FLUSH OUTLET BOX FOR DEVICES INDICATED TO BE DEMOLISHED. REMOVE ALL SURFACE MOUNTED DEVICES AND ASSOCIATED OUTLET BOXES. DO NOT ABANDON IN PLACE.
4. ABANDON EXISTING UNDERGROUND CONDUITS AND CONDUCTORS IN-PLACE. TAG CONDUCTORS AS ABANDONED.
5. REMOVE ALL EXPOSED CONDUITS. REMOVE ALL CONDUCTORS UP TO EXISTING MANHOLE.
6. PROVIDE TEMPORARY SUPPORT FOR ALL DATA/TELEPHONE CABLING DURING CONSTRUCTION.
7. PHASING OF ELECTRICAL WORK IS REQUIRED, SEE GENERAL ELECTRICAL NOTE 13 ON SHEET E-2.

MATCHLINE, SEE SHEET E-4

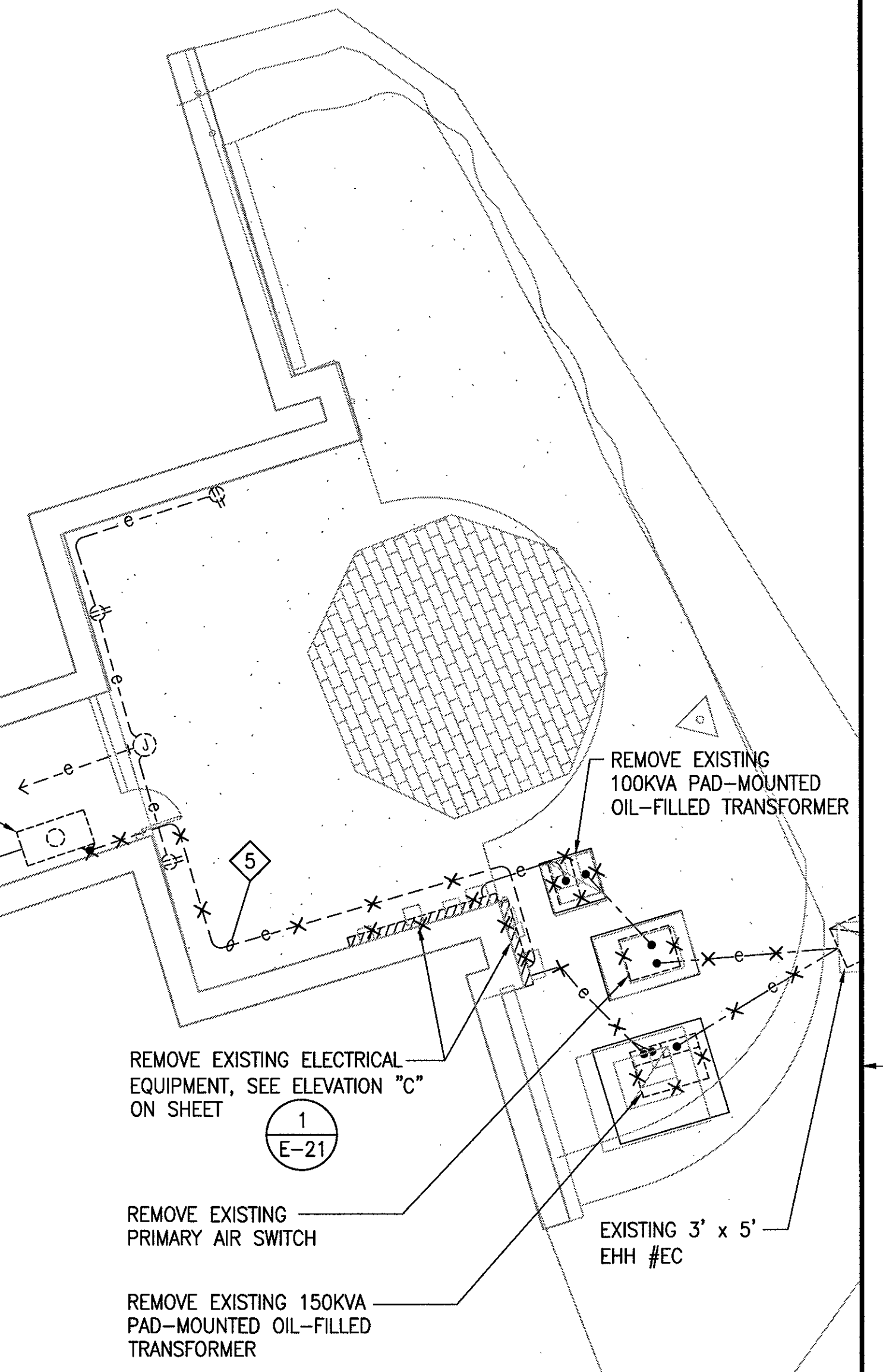


**1 POWER PLAN 2 - DEMOLITION**  
E-5 SCALE: 1/8" = 1'-0"



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY

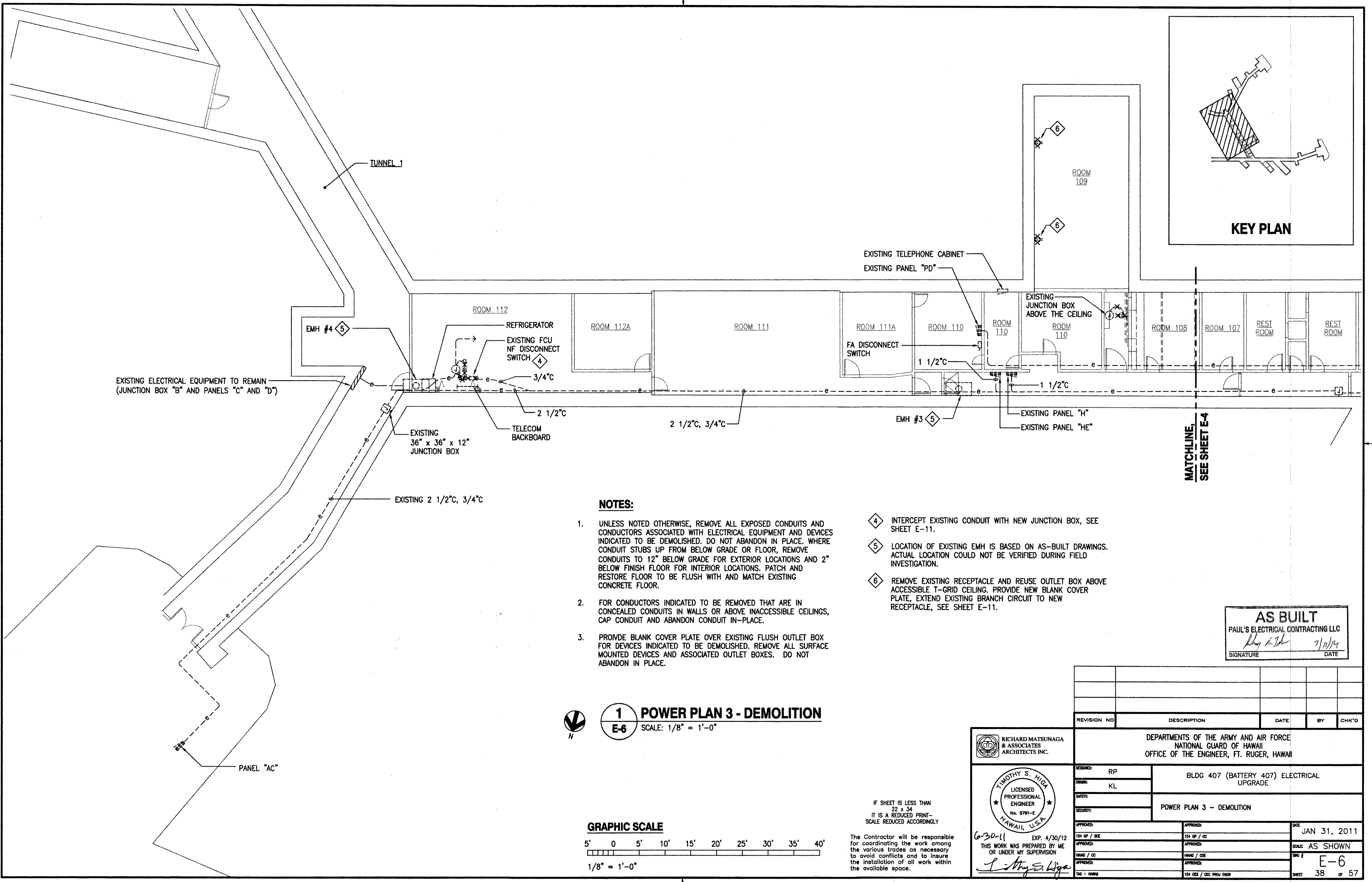
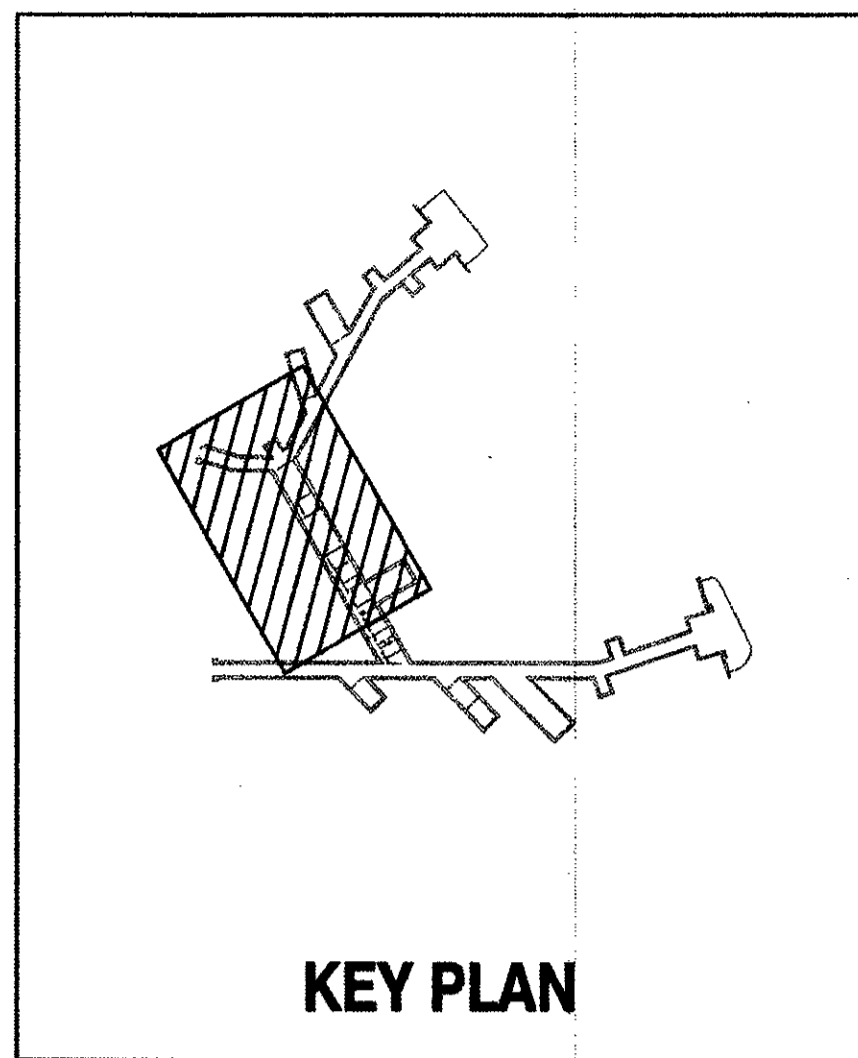
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.



**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul S. Jell* DATE: 7/11/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D
PCD 2	PCD NO.2 WALL REMOVAL AND REPAIR	7/27/2012		

		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED: RP	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE		
DRAWN: KL	POWER PLAN 2 - DEMOLITION		
SAFETY:			
SECURITY:			
APPROVED: [Signature]	APPROVED: [Signature]	DATE: JAN 31, 2011	
154 OR / OBE	154 OR / CC	SCALE: AS SHOWN	
APPROVED: [Signature]	APPROVED: [Signature]	DWG # E-5	
HANG / CC	HANG / OBE	SHEET 37 OF 57	
APPROVED: [Signature]	APPROVED: [Signature]		
TAG - HAWAII	154 CCS / DEC PROJ ENGR		

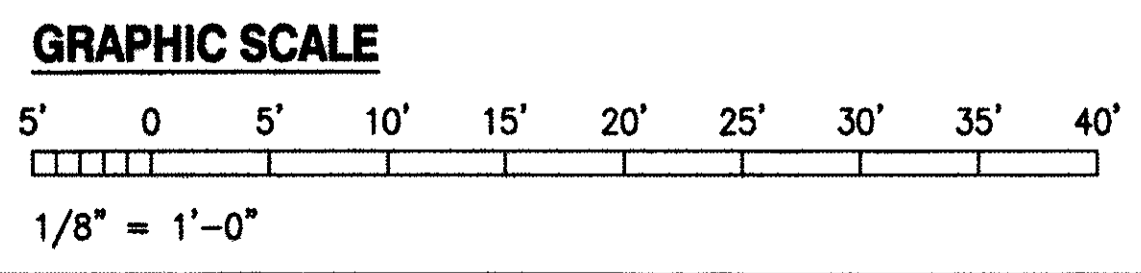


**NOTES:**

- UNLESS NOTED OTHERWISE, REMOVE ALL EXPOSED CONDUITS AND CONDUCTORS ASSOCIATED WITH ELECTRICAL EQUIPMENT AND DEVICES INDICATED TO BE DEMOLISHED. DO NOT ABANDON IN PLACE. WHERE CONDUIT STUBS UP FROM BELOW GRADE OR FLOOR, REMOVE CONDUITS TO 12" BELOW GRADE FOR EXTERIOR LOCATIONS AND 2" BELOW FINISH FLOOR FOR INTERIOR LOCATIONS. PATCH AND RESTORE FLOOR TO BE FLUSH WITH AND MATCH EXISTING CONCRETE FLOOR.
  - FOR CONDUCTORS INDICATED TO BE REMOVED THAT ARE IN CONCEALED CONDUITS IN WALLS OR ABOVE INACCESSIBLE CEILINGS, CAP CONDUIT AND ABANDON CONDUIT IN-PLACE.
  - PROVIDE BLANK COVER PLATE OVER EXISTING FLUSH OUTLET BOX FOR DEVICES INDICATED TO BE DEMOLISHED. REMOVE ALL SURFACE MOUNTED DEVICES AND ASSOCIATED OUTLET BOXES. DO NOT ABANDON IN PLACE.
- 4 INTERCEPT EXISTING CONDUIT WITH NEW JUNCTION BOX, SEE SHEET E-11.
  - 5 LOCATION OF EXISTING EMH IS BASED ON AS-BUILT DRAWINGS. ACTUAL LOCATION COULD NOT BE VERIFIED DURING FIELD INVESTIGATION.
  - 6 REMOVE EXISTING RECEPTACLE AND REUSE OUTLET BOX ABOVE ACCESSIBLE T-GRID CEILING. PROVIDE NEW BLANK COVER PLATE, EXTEND EXISTING BRANCH CIRCUIT TO NEW RECEPTACLE, SEE SHEET E-11.



**1 POWER PLAN 3 - DEMOLITION**  
E-6 SCALE: 1/8" = 1'-0"



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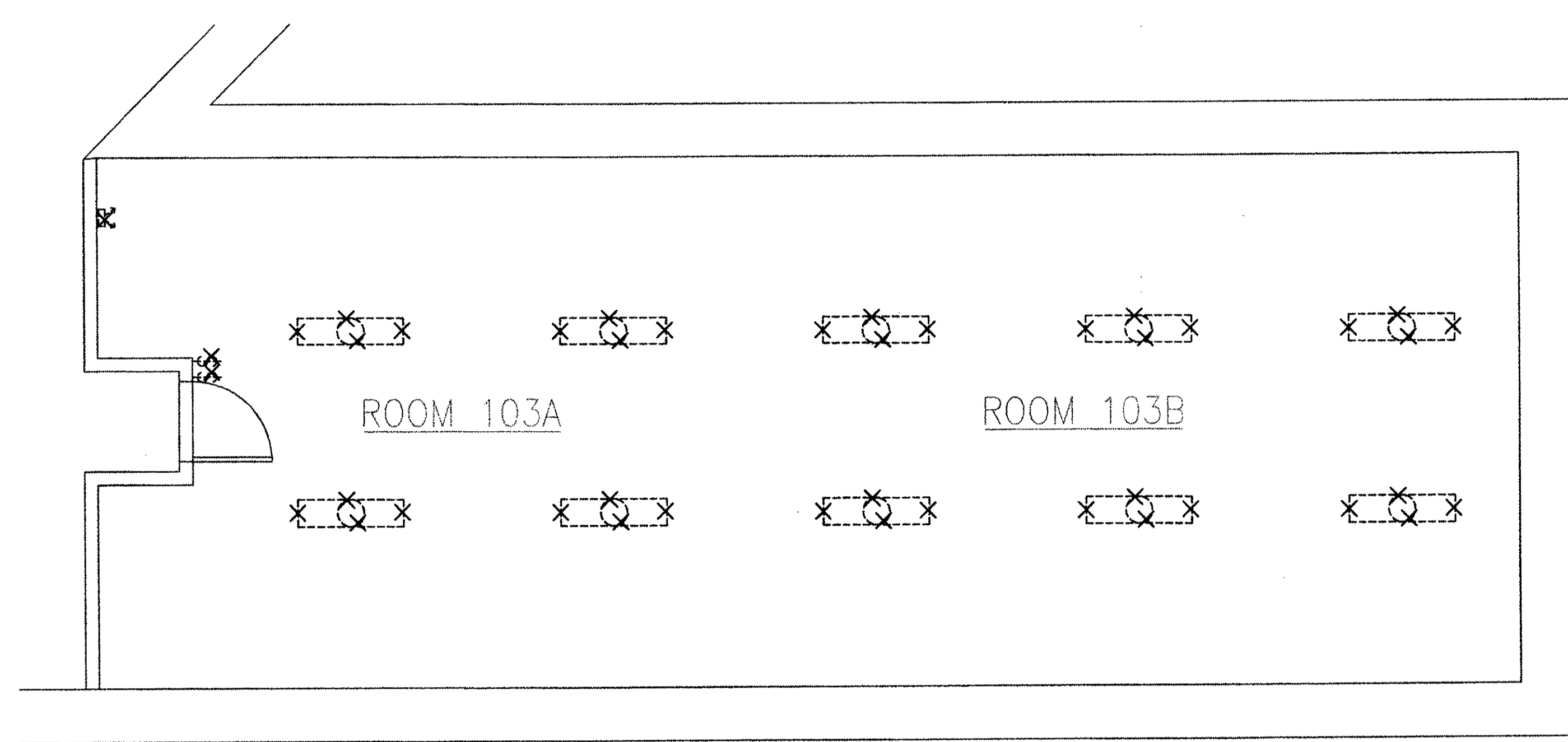
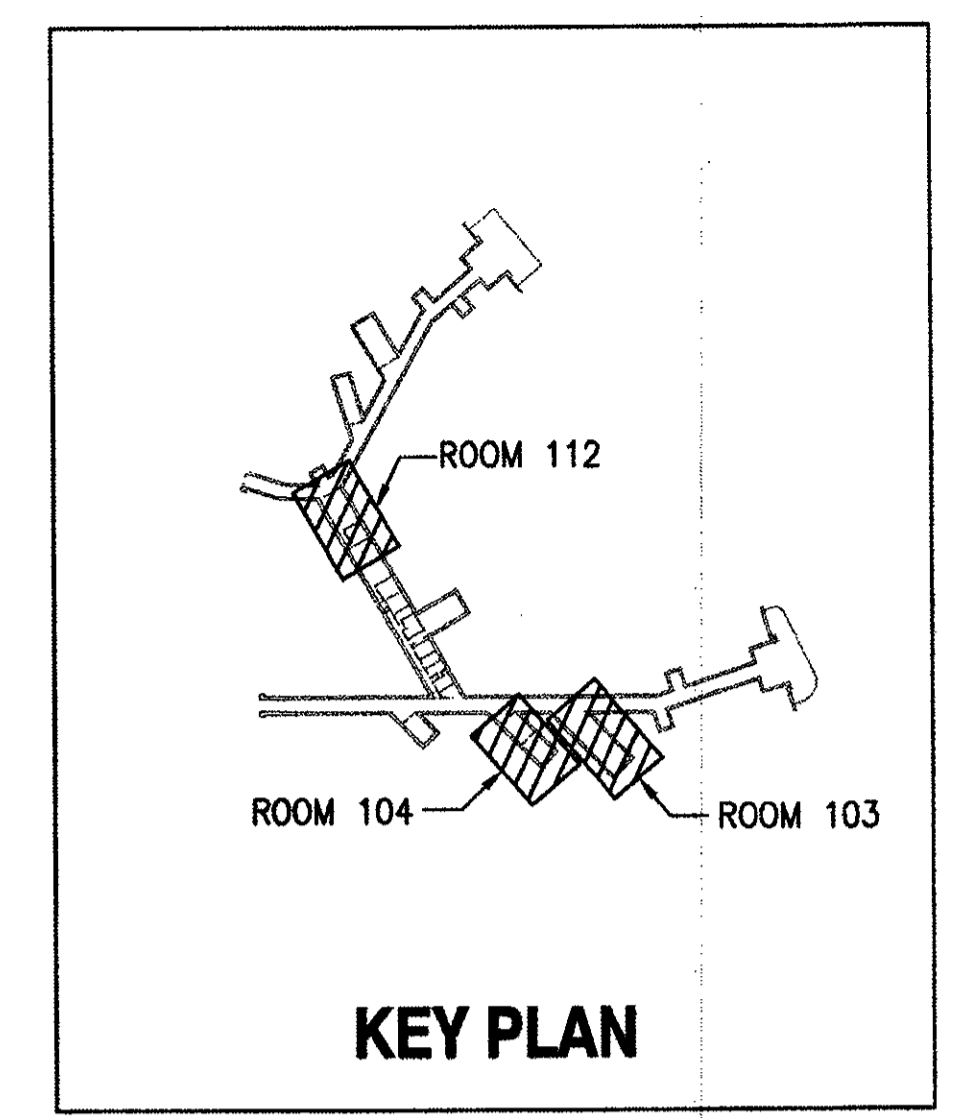
**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *[Signature]* DATE: 7/11/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

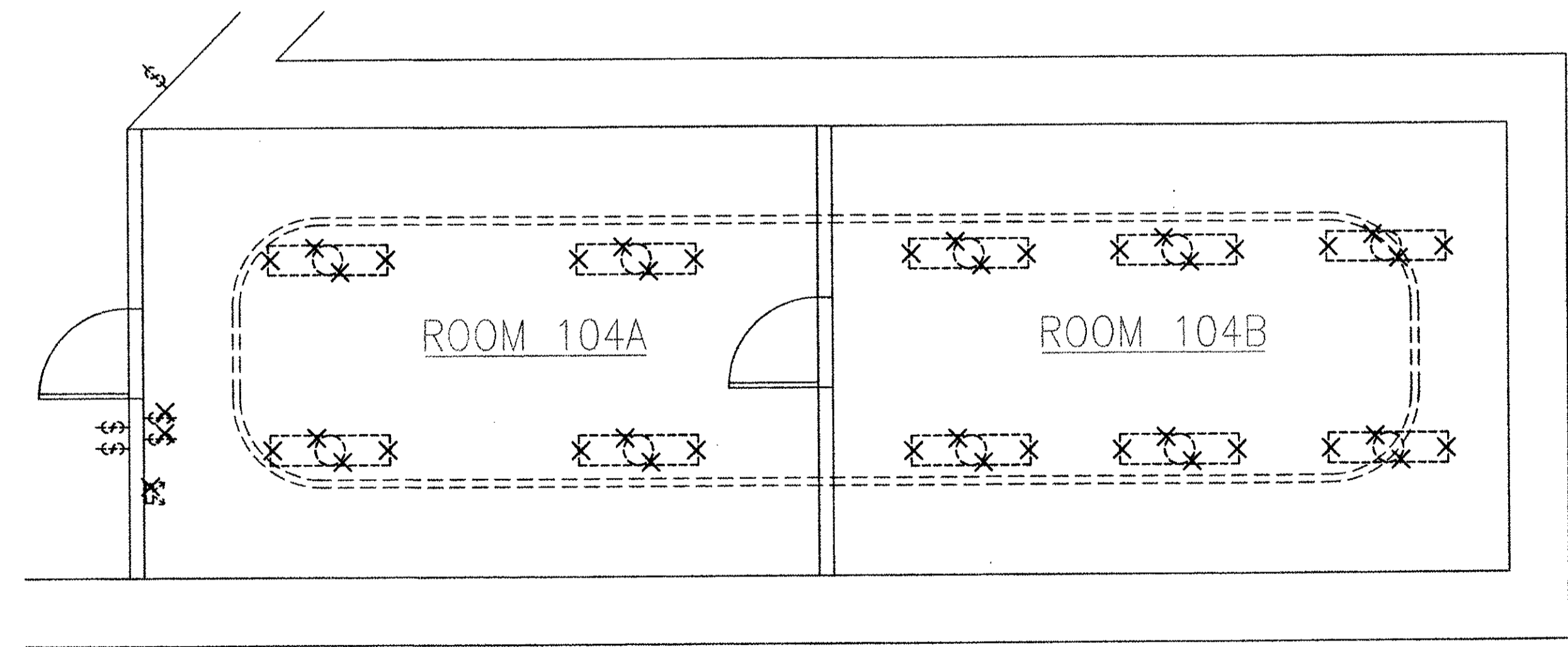
DESIGNED: RP DRAWN: KL SAFETY: [Blank] SECURITY: [Blank]		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII
APPROVED: [Signature] 154 GP / BSE		BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE POWER PLAN 3 - DEMOLITION
APPROVED: [Signature] 154 GP / CC		DATE: JAN 31, 2011
APPROVED: [Signature] 154 GP / CC		SCALE: AS SHOWN
APPROVED: [Signature] 154 GP / CC		SHEET: E-6
APPROVED: [Signature] 154 GP / CC		38 OF 57





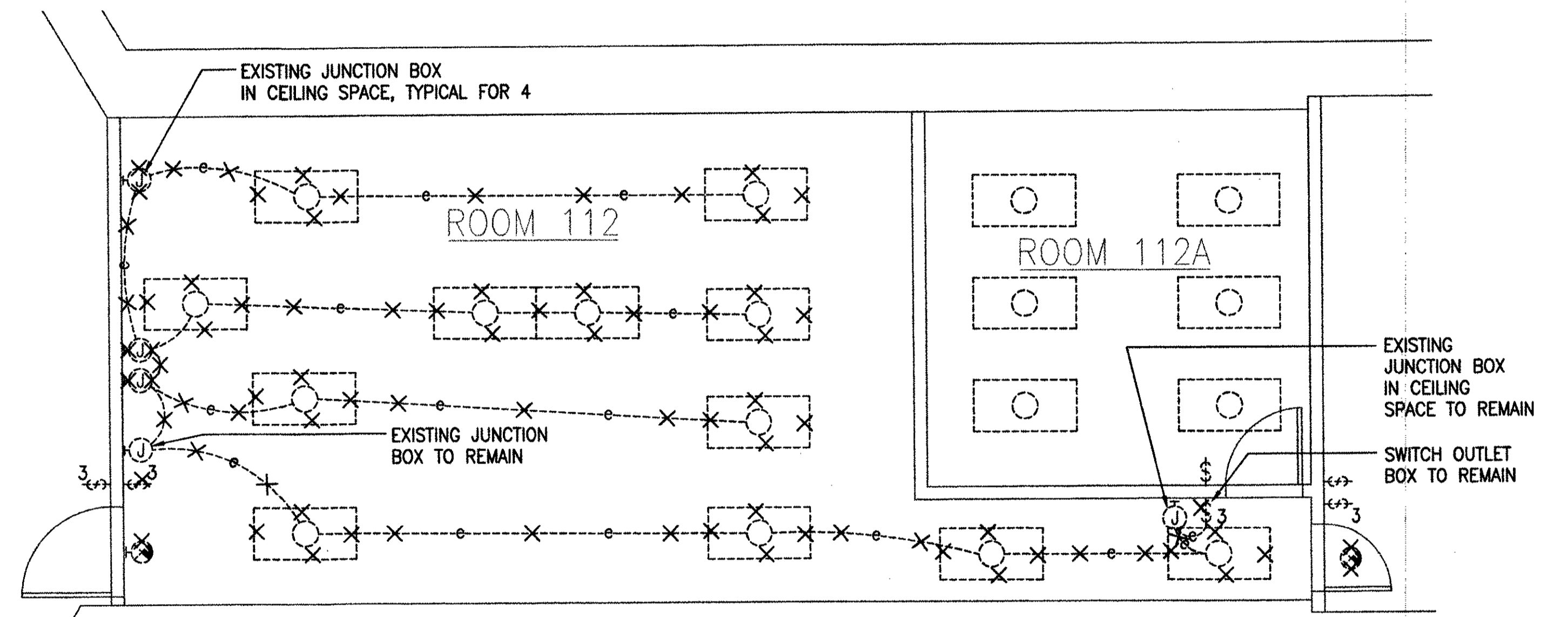
**NOTE:**  
REMOVE RACEWAYS, CONDUCTORS, AND SWITCHES ASSOCIATED WITH LUMINAIRES INDICATED TO BE DEMOLISHED.

**1 ROOM 103 - ENLARGED DEMOLITION LIGHTING PLAN**  
E-7 SCALE: 1/4" = 1'-0"



**NOTE:**  
REMOVE RACEWAYS, CONDUCTORS, AND SWITCHES ASSOCIATED WITH LUMINAIRES INDICATED TO BE DEMOLISHED.

**2 ROOM 104 - ENLARGED DEMOLITION LIGHTING PLAN**  
E-7 SCALE: 1/4" = 1'-0"

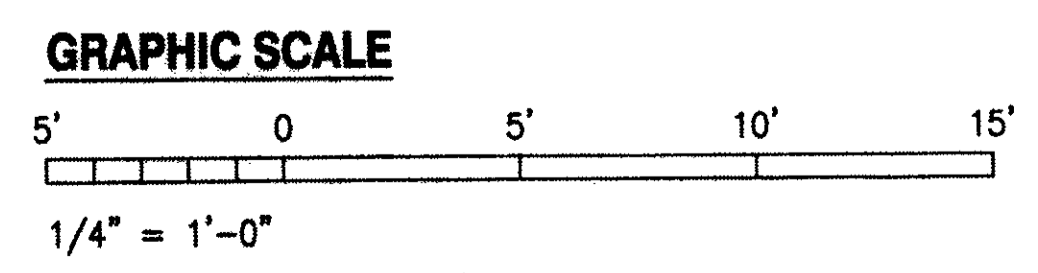


**NOTE:**  
REMOVE RACEWAYS, CONDUCTORS, AND SWITCHES ASSOCIATED WITH LUMINAIRES INDICATED TO BE DEMOLISHED UNLESS OTHERWISE NOTED.

**3 ROOM 112 - ENLARGED DEMOLITION LIGHTING PLAN**  
E-7 SCALE: 1/4" = 1'-0"

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul S. Silva* DATE: 7/11/14

REVISION NO.	DESCRIPTION	DATE	BY	CHK'D

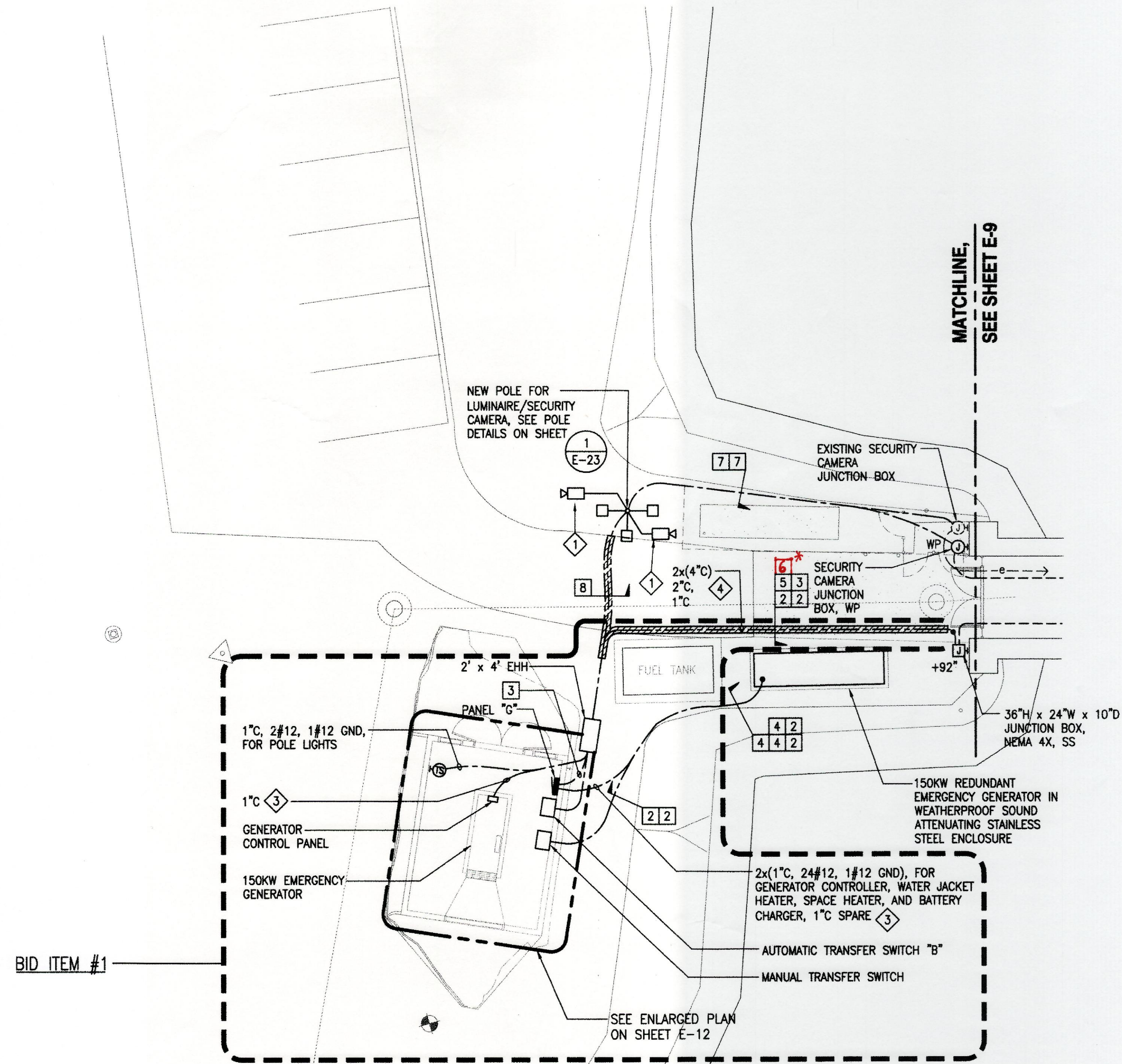
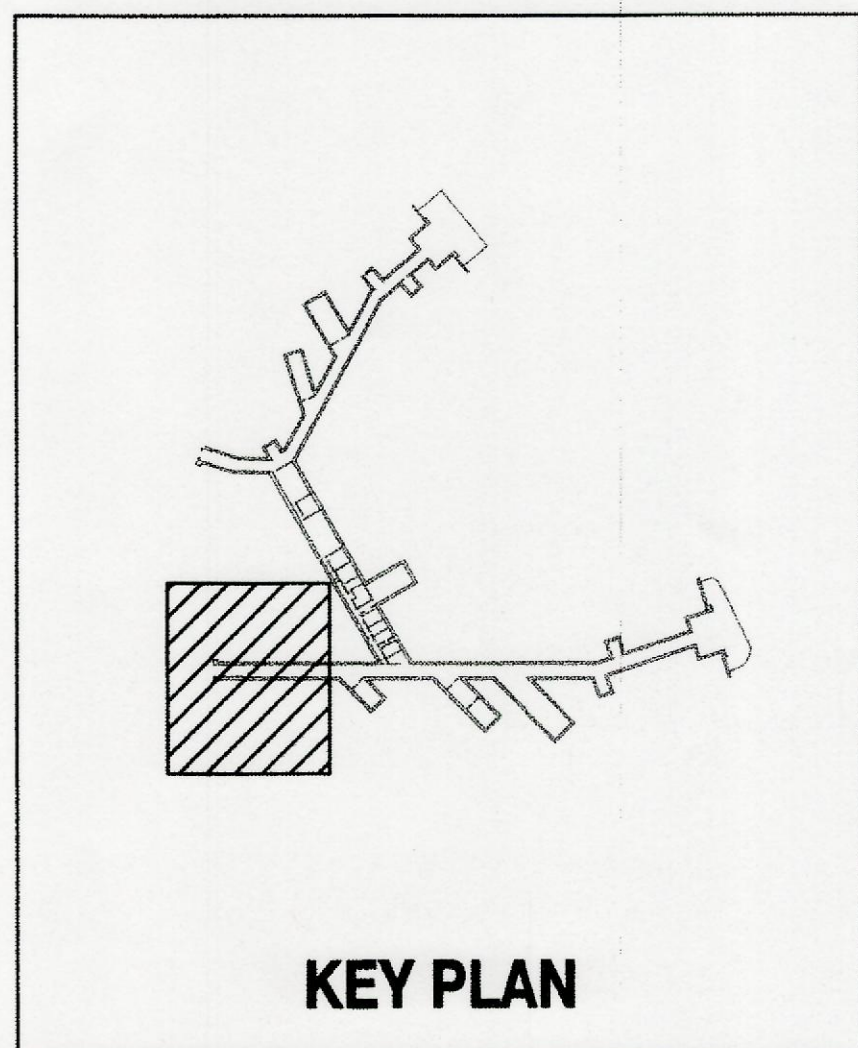


IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY  
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

TIMOTHY S. HIGA  
LICENSED PROFESSIONAL ENGINEER  
No. 5791-E  
HAWAII, U.S.A.  
6-30-11 EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Higa*

DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII				
DESIGNED: BS	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE			
DRAWN: KL	ENLARGED DEMOLITION LIGHTING PLANS			
SAFETY:				
SECURITY:				
APPROVED:				
154 OP / BZE	154 OP / CC			DATE: JAN 31, 2011
				SCALE: AS SHOWN
				DWG # E-7
				SHEET 39 OF 57

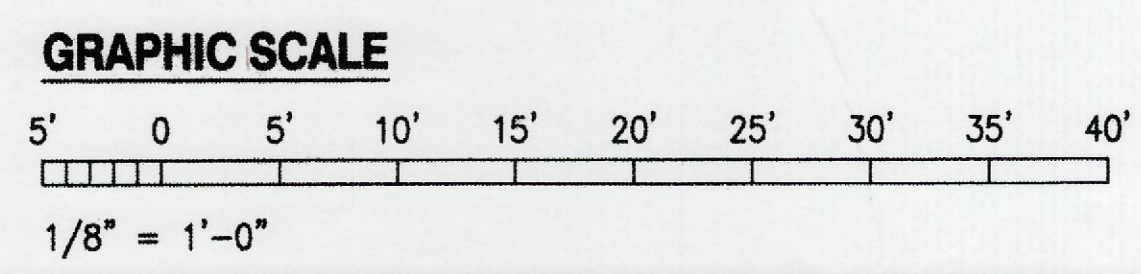


- NOTES:**
- 1 SECURITY CAMERA AND ASSOCIATED CABLES BY THE GOVERNMENT.
  - 2. UNLESS OTHERWISE NOTED, ALL PENETRATIONS SHALL BE MADE WITH CORE-DRILLING.
  - 3 GENERATOR SIGNAL WIRING, PROVIDE WIRING/CABLING PER MANUFACTURER'S RECOMMENDATION.

\* 1" C WITH GENERATOR CONTROLS

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul J. Paul* 7/11/14  
 SIGNATURE DATE

**1 ELECTRICAL SITE PLAN**  
 E-8 SCALE: 1/8" = 1'-0"



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

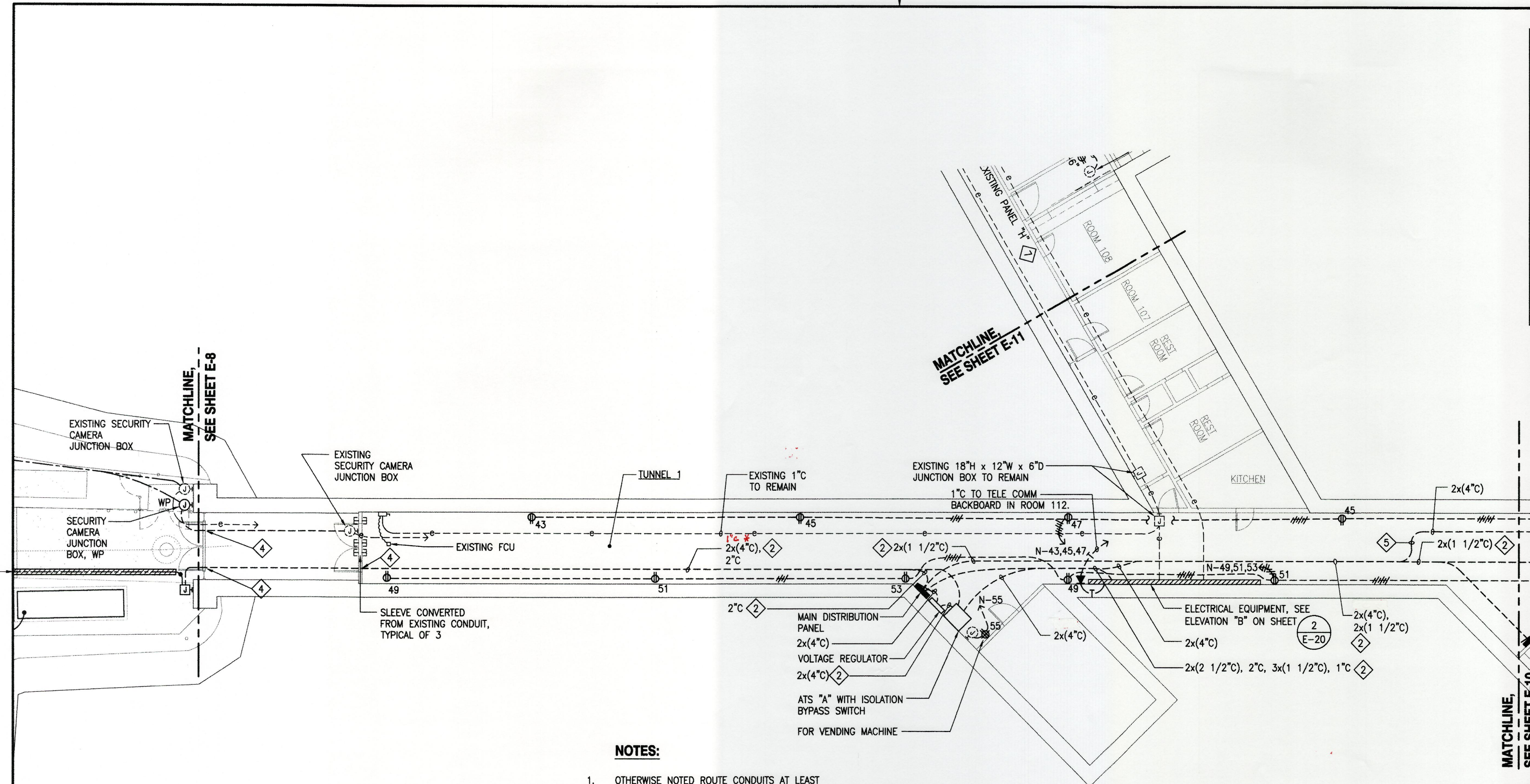
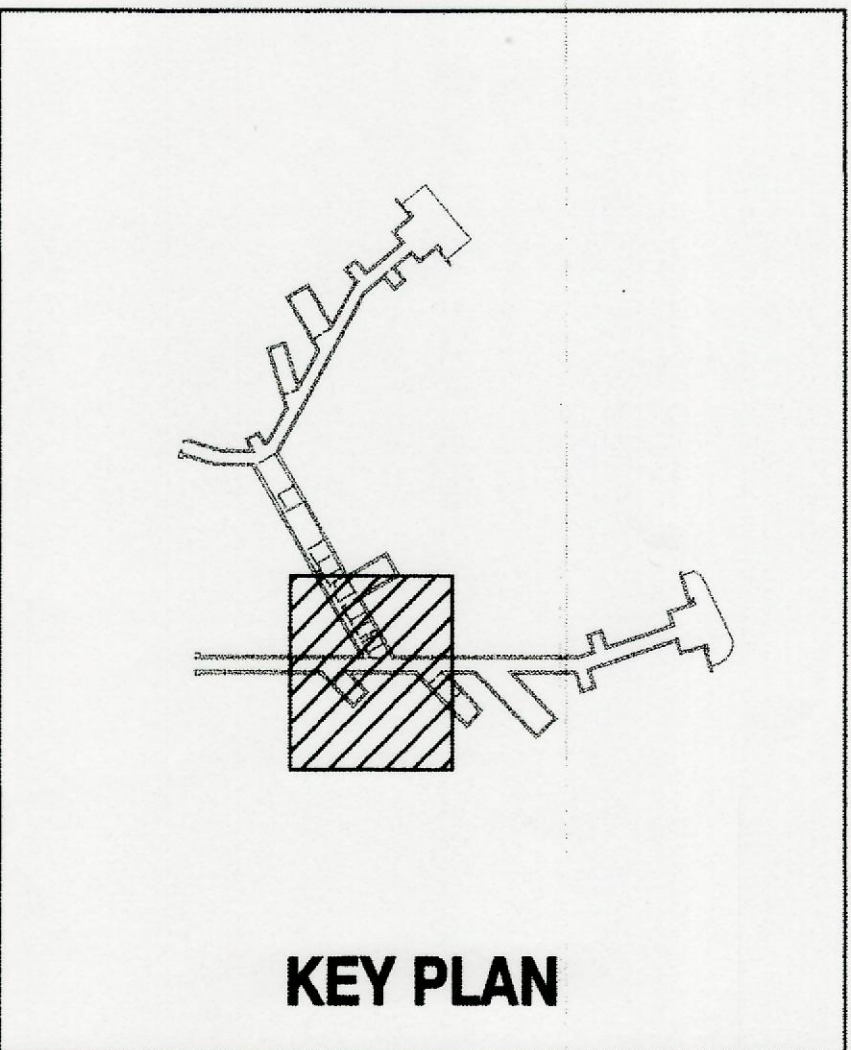
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED:	RP	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE	
DRAWN:	KL	ELECTRICAL SITE PLAN	
SAFETY:			
SECURITY:			
APPROVED:		DATE	JAN 31, 2011
154 OP / BIC		154 OP / CC	
APPROVED:		SCALE	AS SHOWN
154 OP / CC		154 OP / ODE	
APPROVED:		DATE	E-8
154 OP / CC		154 OP / CC PROJ ENGR	SHEET 40 of 57

6-30-11 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Higa*

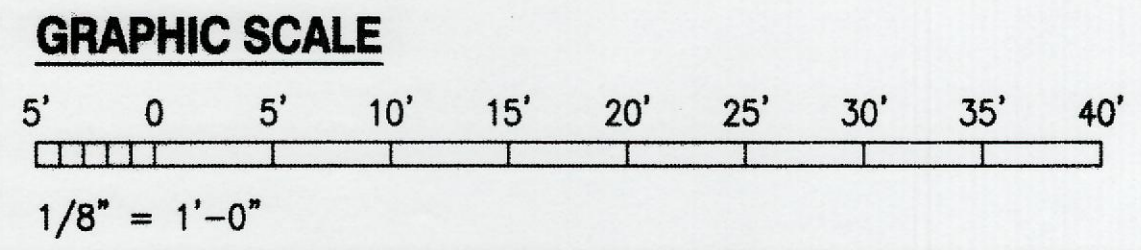


**NOTES:**

1. OTHERWISE NOTED ROUTE CONDUITS AT LEAST 7'-8" AFF MINIMUM ALONG THE WALL.
2. SEE ONE-LINE DIAGRAM ON SHEET E-19 FOR QUANTITY AND SIZE OF SPARE CONDUCTORS.
3. MATCH EXISTING CONDUCTOR QUANTITY AND SIZE.
4. PENETRATE EXISTING METAL SCREEN AND WOOD PANEL FOR CONDUIT INSTALLATION. PATCH AND PAINT TO MATCH SURROUNDING FINISHES.
5. FOR CONDUIT INSTALLATION CROSSING THE HALLWAY, MOUNT CONDUIT 2" BELOW EXISTING A/C DUCTS.
6. PROVIDE SEPERATE NEUTRAL FOR ALL RECEPTACLE CIRCUITS.

\* 1" C WITH GENERATOR CONTROLS

**1 ELECTRICAL PLAN 1 - NEW WORK**  
 E-9 SCALE: 1/8" = 1'-0"



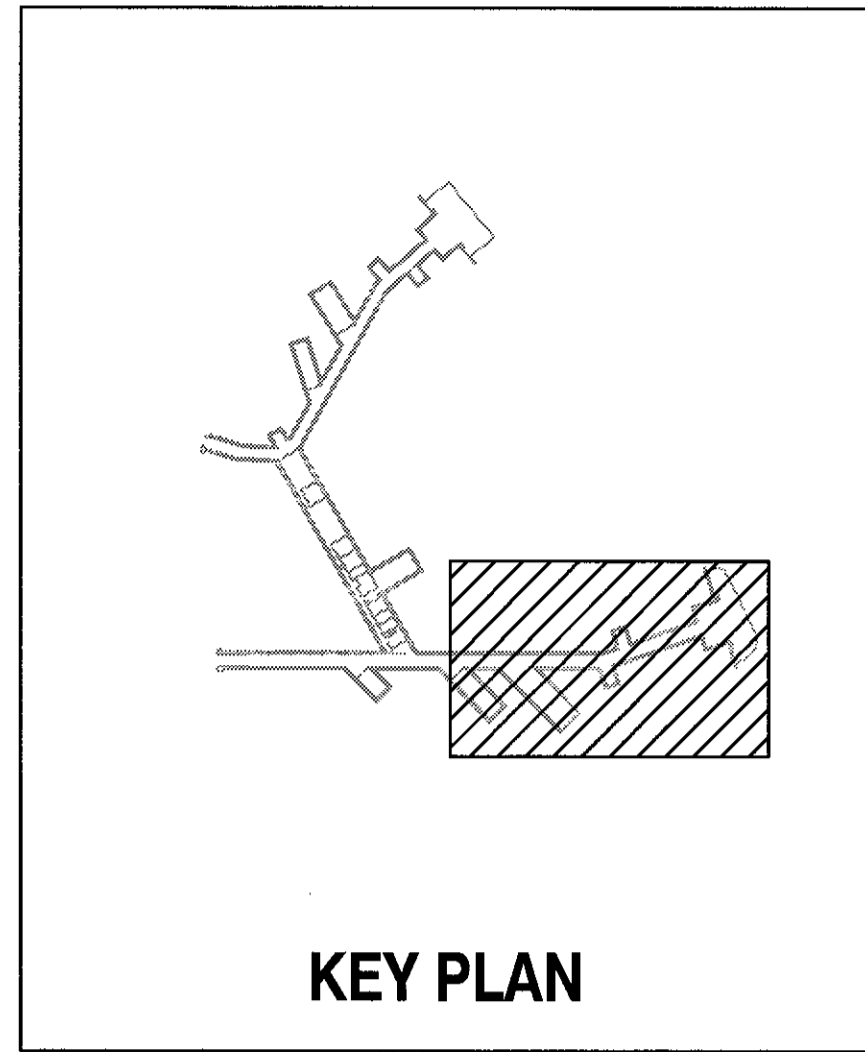
IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 Signature: Paul's Electrical Contracting LLC  
 DATE: 7/11/14

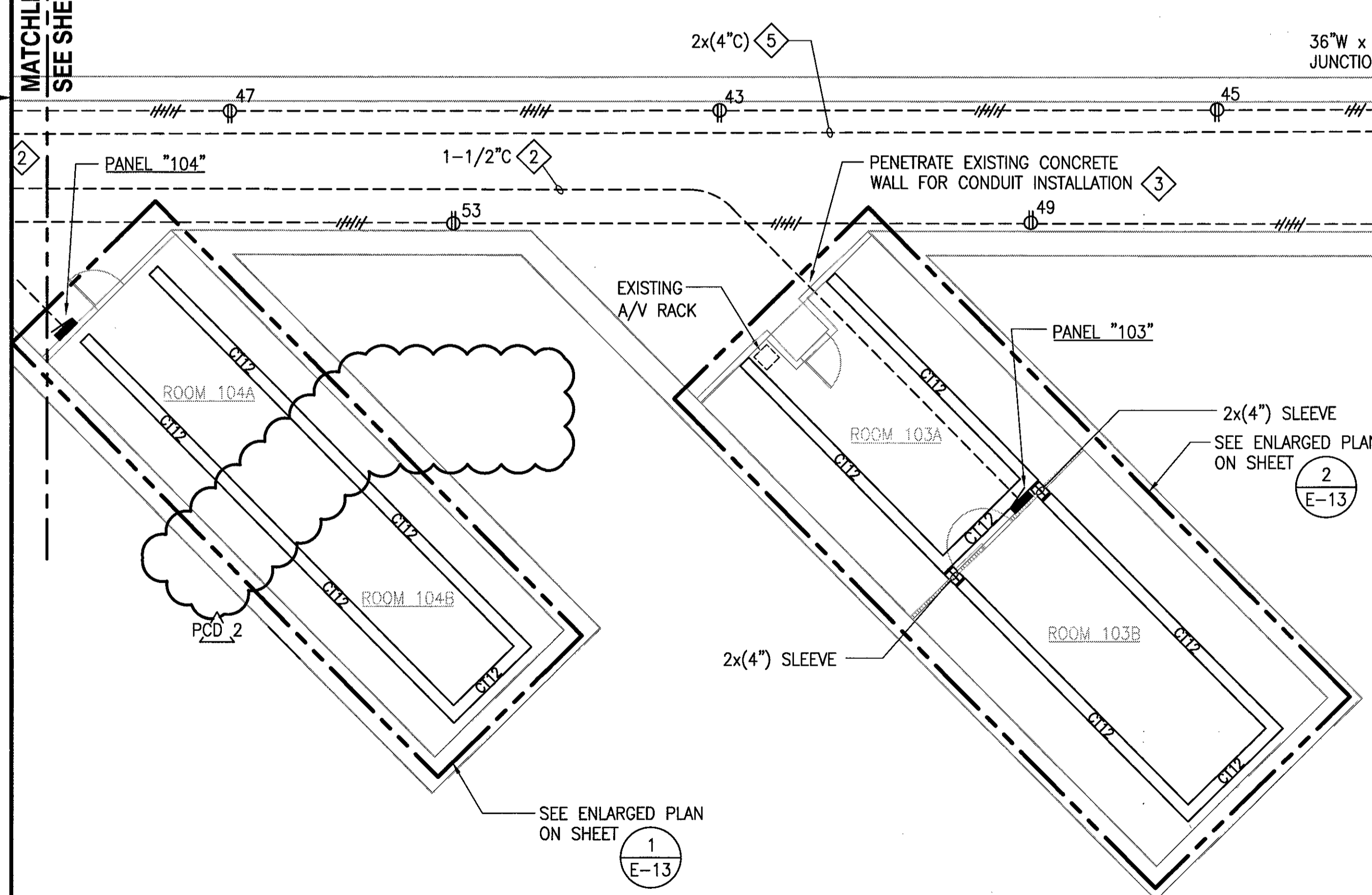
REVISION NO	DESCRIPTION	DATE	BY	CHK'D

		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED: RP DRAWN: KL SAFETY: SECURITY:	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE ELECTRICAL PLAN 1 - NEW WORK		
APPROVED: 6-30-11 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION 	APPROVED: EXP. 4/30/12 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION 	DATE: JAN 31, 2011 SCALE: AS SHOWN DWG: E-9 SHEET: 41 of 57	APPROVED: 154 GP / BDE APPROVED: 154 GP / CC APPROVED: 154 CES / CES PROJ ENGR



KEY PLAN

MATCHLINE, SEE SHEET E-9

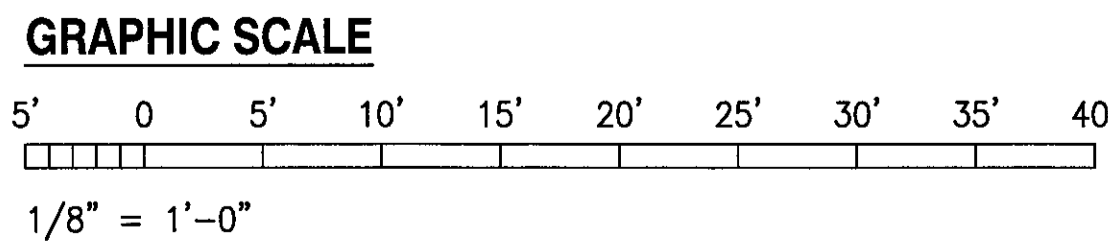


NOTES:

- 1. OTHERWISE NOTED ROUTE CONDUITS AT LEAST 92" AFF MINIMUM.
- 2. PROVIDE SEPARATE NEUTRAL FOR ALL RECEPTACLE CIRCUITS.
- 3. PATCH AND PAINT TO MATCH SURROUNDING FINISHES.
- 4. UNLESS OTHERWISE NOTED, ALL PENETRATIONS SHALL BE MADE WITH CORE-DRILLING.
- 5. SEE ONE-LINE DIAGRAM ON SHEET E-19 FOR QUANTITY AND SIZE OF CONDUCTORS.



**1 ELECTRICAL PLAN 2 - NEW WORK**  
 E-10 SCALE: 1/8" = 1'-0"



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

TIMOTHY S. HIGH LICENSED PROFESSIONAL ENGINEER No. 5791-E HAWAII, U.S.A.

EXP. 4/30/12 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

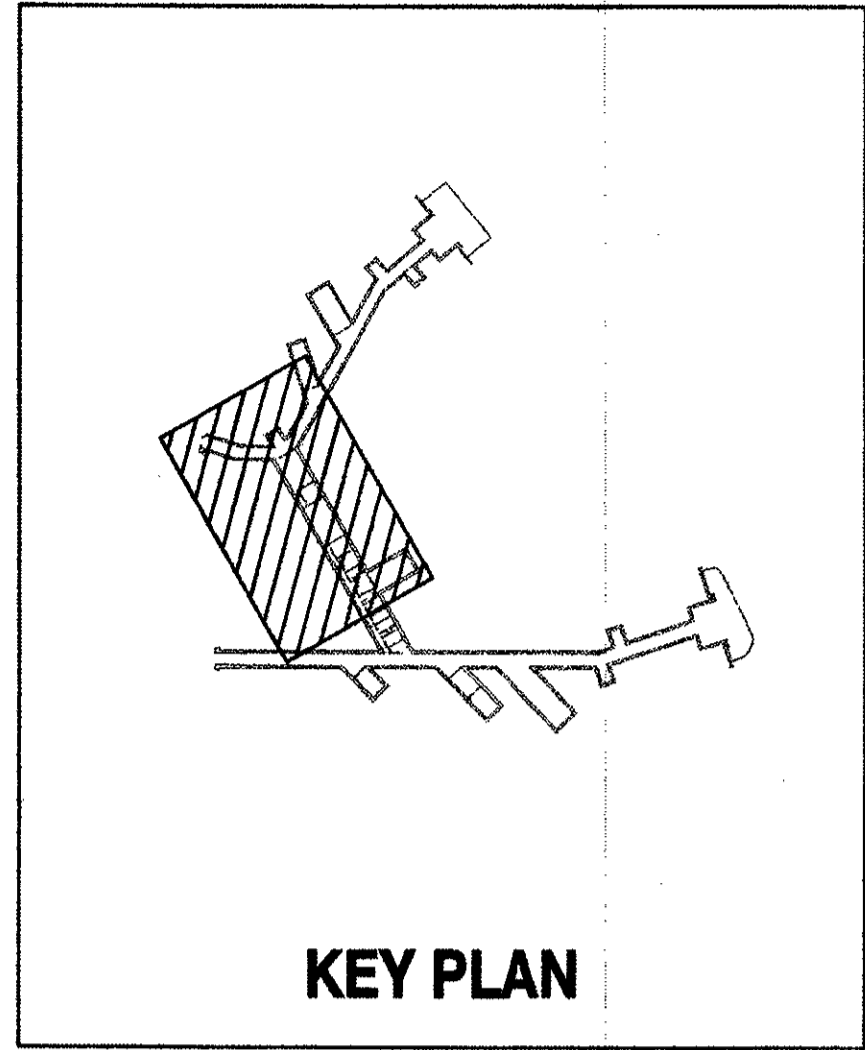
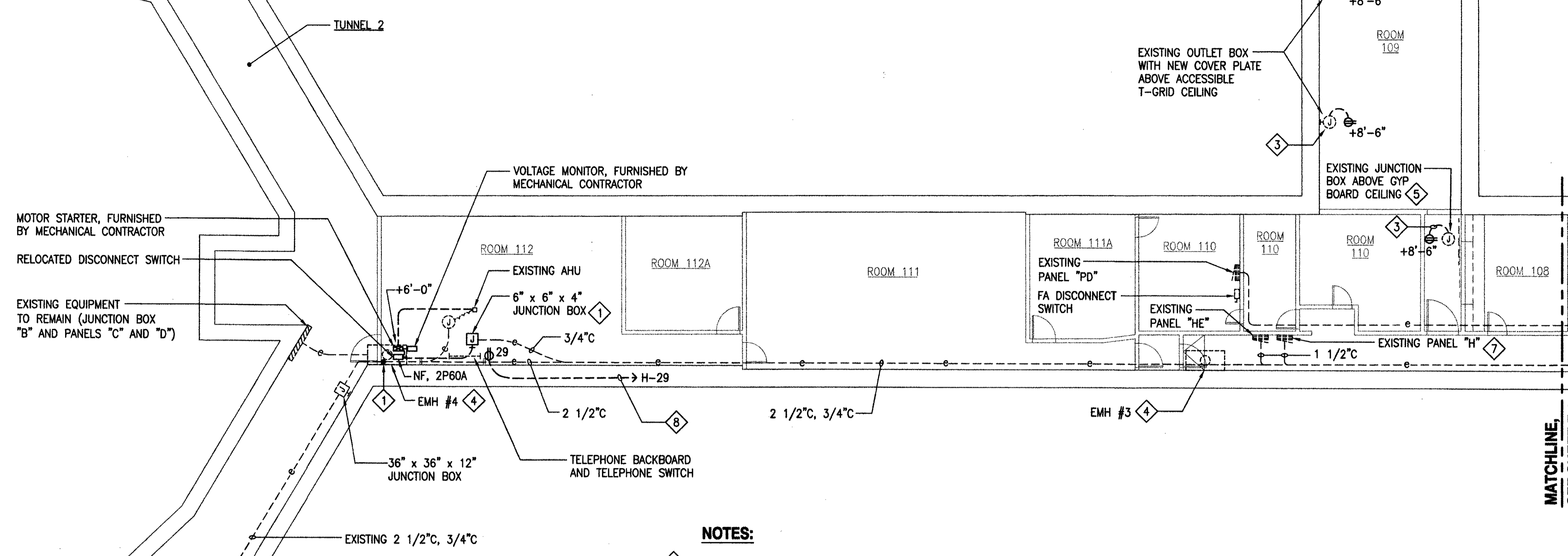
REVISION NO	DESCRIPTION	DATE	BY	CHK'D
PCD 2	PCD NO.2 WALL REMOVAL AND REPAIR	7/27/2012		

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: RP  
 DRAWN: KL  
 SAFETY:  
 SECURITY:  
 BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE  
 ELECTRICAL PLAN 2 - NEW WORK

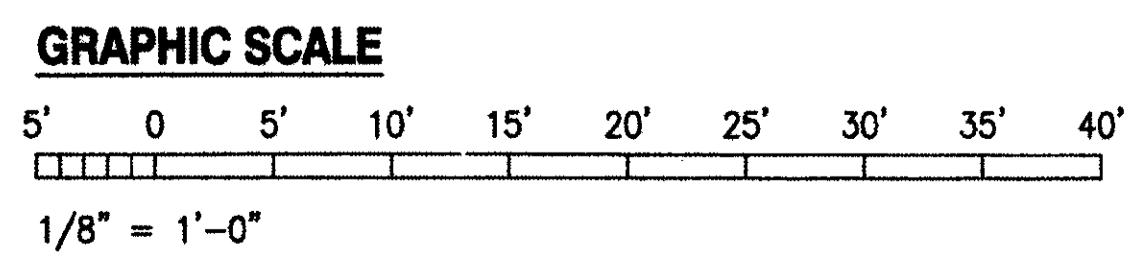
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APPROVED: 154 OS / CC	APPROVED: 154 OS / CCE	JAN 31, 2011
APPROVED: 154 OS / CC	APPROVED: 154 OS / CCE	SCALE: AS SHOWN
APPROVED: 154 OS / CC	APPROVED: 154 OS / CCE	DWG # E-10
APPROVED: 154 OS / CC	APPROVED: 154 OS / CCE	SHEET 42 OF 57

AS BUILT  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 SIGNATURE: Paul A. John DATE: 7/16/14



- NOTES:**
- 1 INTERCEPT EXISTING CONDUIT WITH JUNCTION BOX AND EXTEND EXISTING CIRCUIT TO RELOCATED NF DISCONNECT SWITCH AND MOTOR STARTER FOR EXISTING FCU.
  - 2 LOCATION OF EXISTING EMH IS BASED ON AS-BUILT DRAWINGS. ACTUAL LOCATION COULD NOT BE VERIFIED DURING FIELD INVESTIGATION.
  - 3 EXTEND EXISTING BRANCH CIRCUIT TO NEW RECEPTACLE.
  - 4 LOCATION OF EXISTING EMH IS BASED ON AS-BUILT DRAWINGS. ACTUAL LOCATION COULD NOT BE VERIFIED DURING FIELD INVESTIGATION.
  - 5 EXISTING JUNCTION BOX IS ACCESSIBLE BY GOING TO THE ACCESSIBLE SPACE ABOVE ROOM 109.
  - 6 PROVIDE NEW 1P20A CIRCUIT BREAKER AT BREAKER POSITION 19. SIEMENS TYPE CDP-3 208/120V, 225A, 10 KAIC.
  - 7 PROVIDE NEW 1P20A BREAKER AT BREAKER POSITION 29 FOR NEW RECEPTACLE.
  - 8 ROUTE CONDUIT AT LEAST 10'-0" AFF.

**1 ELECTRICAL PLAN 3 - NEW WORK**  
**E-11** SCALE: 1/8" = 1'-0"



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul A. De...* 7/11/11  
 SIGNATURE DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

**RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.**

**TIMOTHY S. HIGA**  
 LICENSED PROFESSIONAL ENGINEER  
 No. 5791-E  
 HAWAII, U.S.A.

DESIGNED: RP  
 DRAWN: KL  
 SAFETY: [blank]  
 SECURITY: [blank]

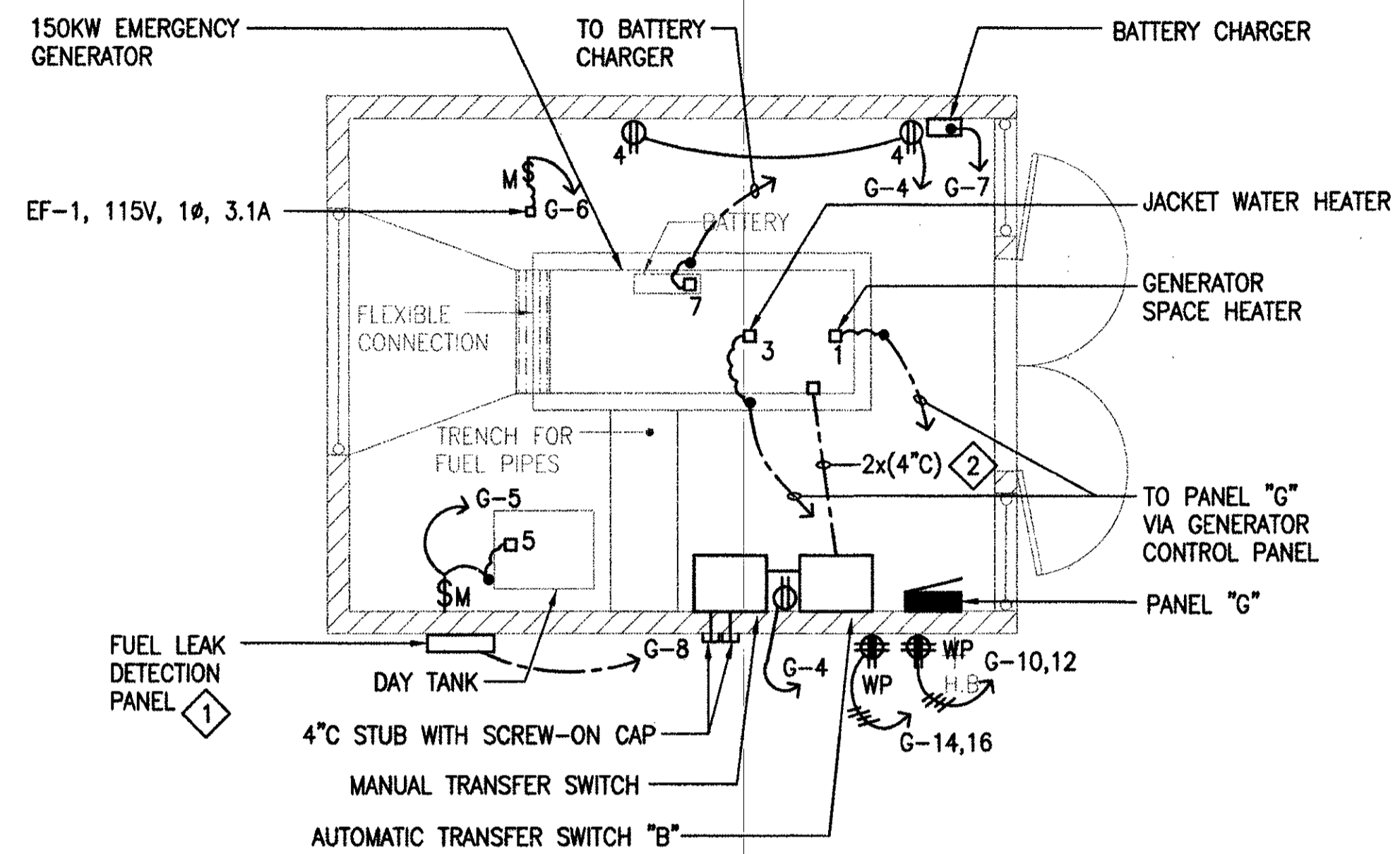
DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

**ELECTRICAL PLAN 3 - NEW WORK**

APPROVED: [blank] DATE: JAN 31, 2011  
 154 GP / ICE  
 APPROVED: [blank] SCALE: AS SHOWN  
 154 GP / ICE  
 APPROVED: [blank] DWG #  
 154 GES / CEE PROJ ENGR  
 154 GES / CEE PROJ ENGR

DATE: JAN 31, 2011  
 SCALE: AS SHOWN  
 DWG # E-11  
 SHEET 43 OF 57

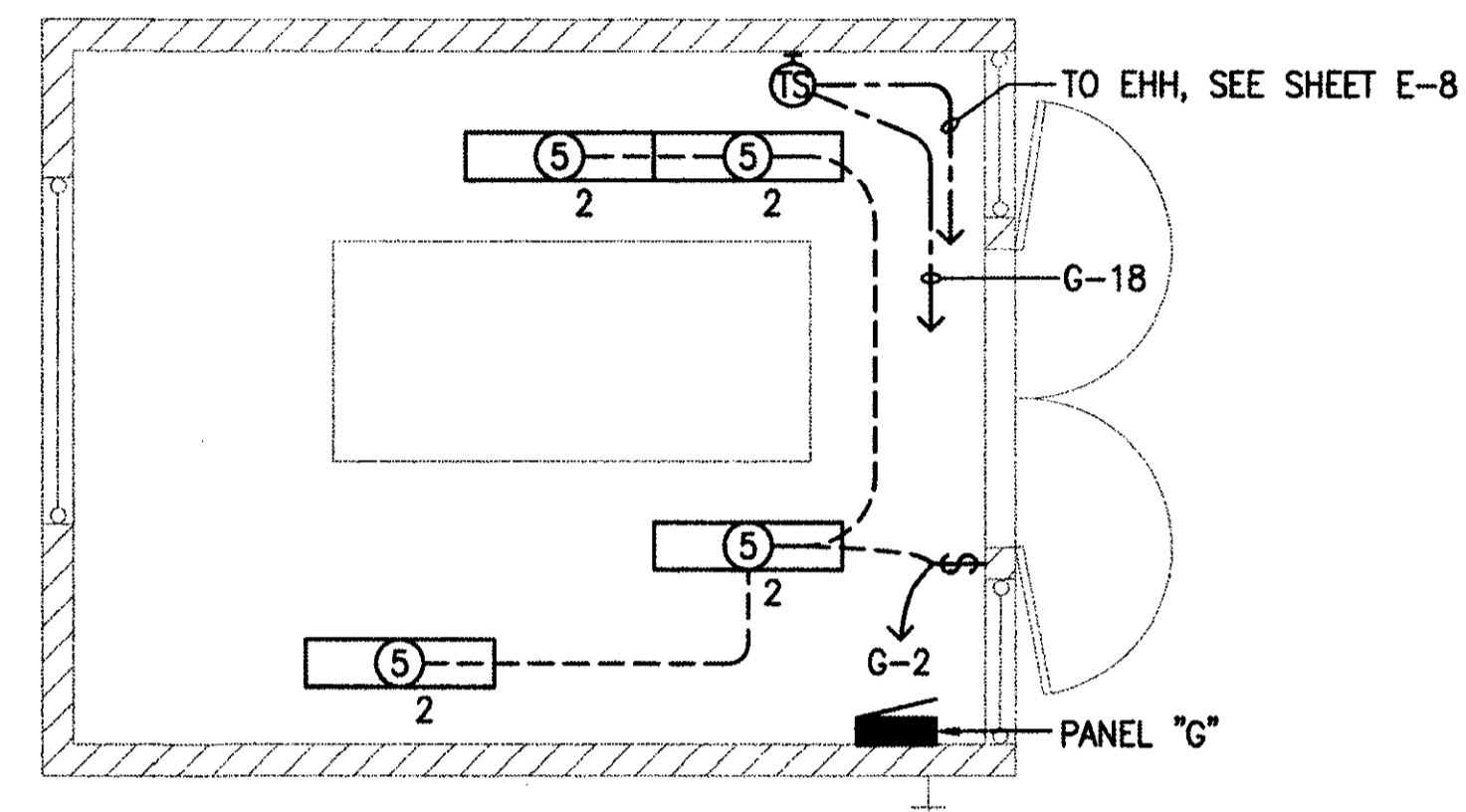


**NOTES:**

- 1 FURNISHED BY MECHANICAL CONTRACTOR.
- 2 SEE ONE-LINE DIAGRAM ON SHEET E-19 FOR QUANTITY AND SIZE OF CONDUCTORS.
- 3. PROVIDE SEPARATE NETURAL FOR ALL BRANCH CIRCUITS.



**1 ENLARGED GENERATOR ROOM POWER PLAN**  
E-12 SCALE: 1/4" = 1'-0"



**2 ENLARGED GENERATOR ROOM LIGHTING PLAN**  
E-12 SCALE: 1/4" = 1'-0"

BID ITEM #1

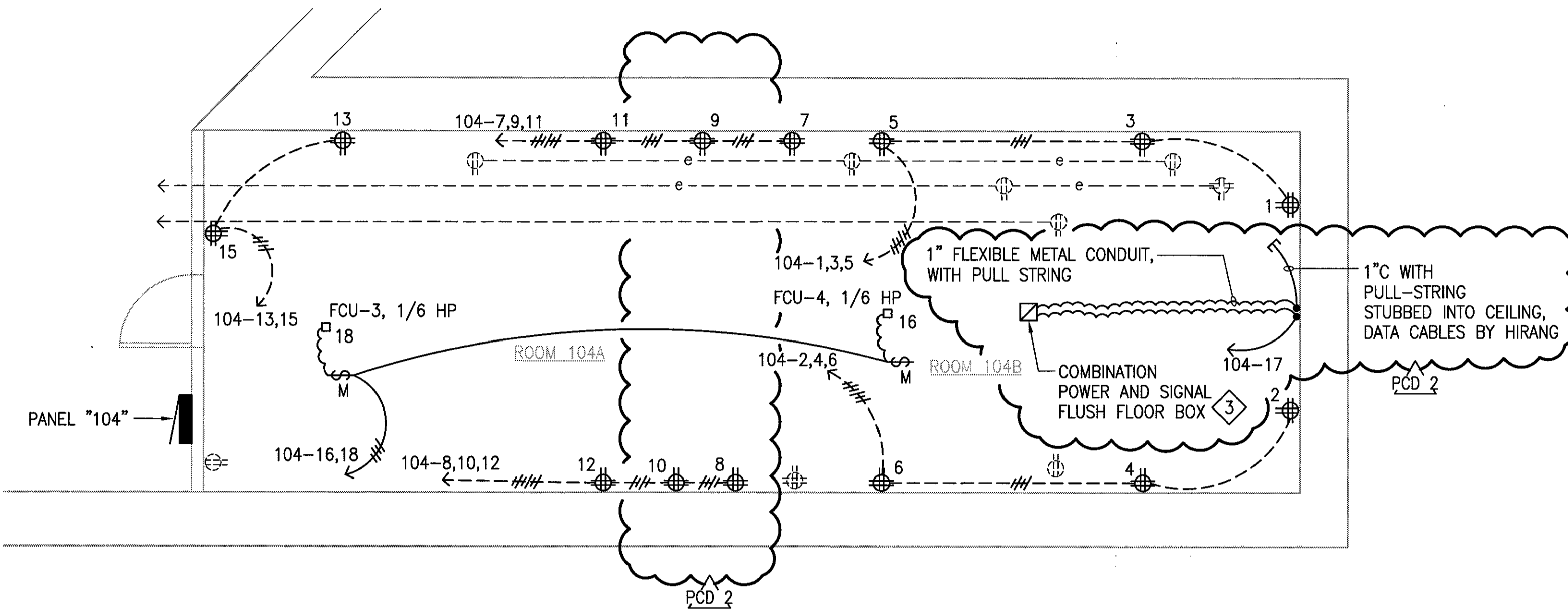
**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul S. Higa* 7/11/11  
SIGNATURE DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED: BS DRAWN: KL SAFETY: SECURITY:	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE  ENLARGED GENERATOR ROOM PLANS		
APPROVED: 6-30-11 154 OP / DCE NAME / CDE TSD - HAWAII	APPROVED: EXP. 4/30/12 154 OP / CC NAME / CDE 154 CCS / CEE PROJ ENGR	DATE JAN 31, 2011	SCALE: AS SHOWN SHEET 44 OF 57

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT—SCALE REDUCED ACCORDINGLY

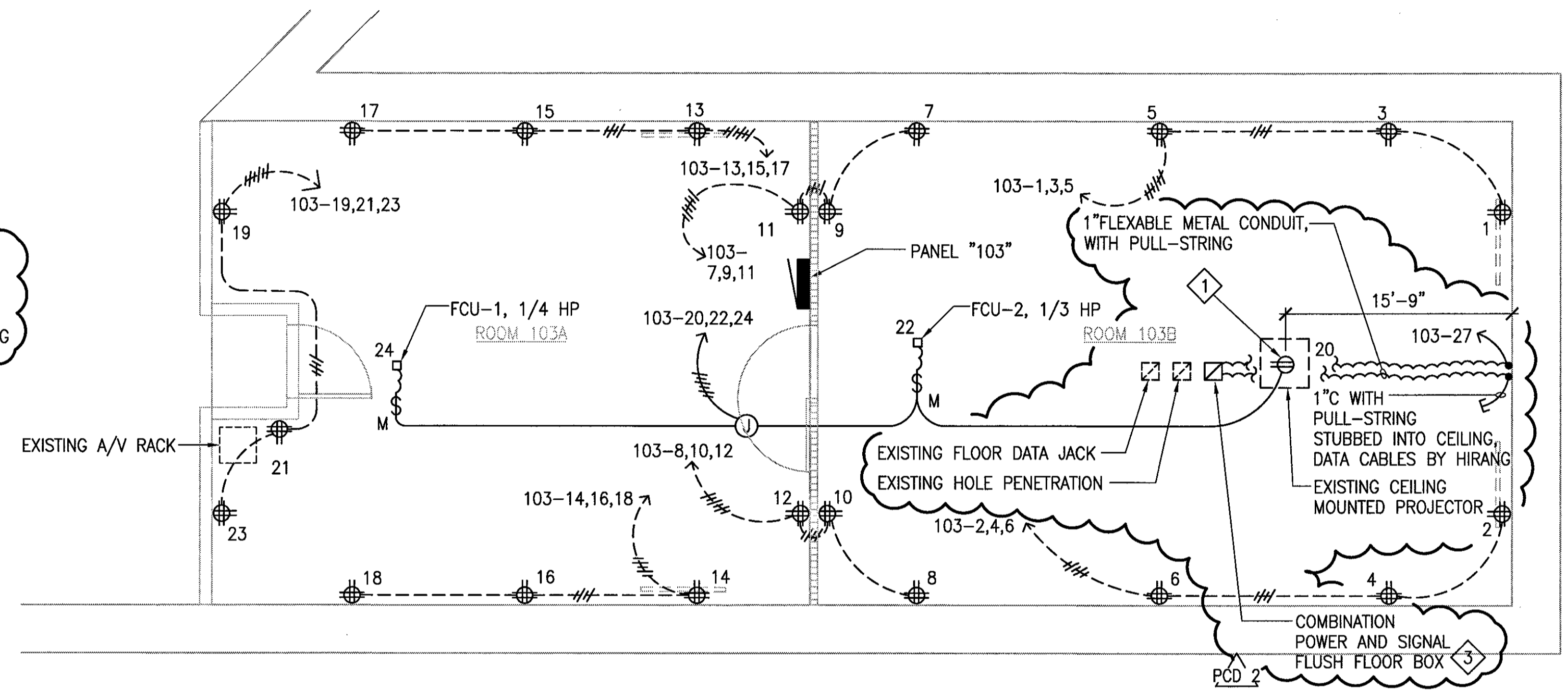
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.



**NOTES:**

1. EXISTING RECEPTACLES TO REMAIN.
2. PROVIDE SEPARATE NEUTRAL FOR ALL BRANCH CIRCUITS.
3. FLOOR BOX SHALL BE 15 1/8"(L)x11 3/16"(W)x4 1/6"(D) NOMINAL, 6-GANG BOX CAPACITY, THREE (3) DUPLEX RECEPTACLES, THREE (3) SINGLE-GANG BLANK DEVICE PLATES, SURFACE STYLE COVER WITH CARPET INSERT AND BLACK FINISH.  
FLOOR BOX: WIREMOLD EFB6S, OR APPROVED EQUAL COVER: WIREMOLD EFB610CTCBK, OR APPROVED EQUAL
4. ROUTE CONDUIT UNDER FLOOR IN THE CONCRETE CHANNEL BELOW. SEE ARCHITECTURAL DRAWING FOR MORE DETAILS.

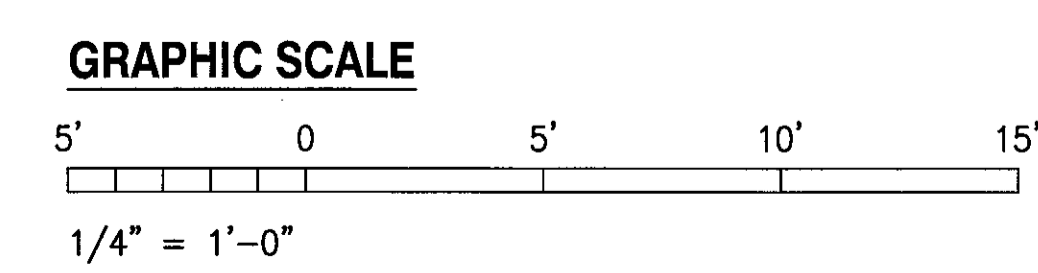
**1 ENLARGED ELECTRICAL PLAN - ROOM 104**  
E-13 SCALE: 1/4" = 1'-0"



**NOTES:**

1. PROJECTOR RECEPTACLE, FLUSH CEILING MOUNTED.
2. PROVIDE SEPARATE NEUTRAL FOR ALL BRANCH CIRCUITS.
3. FLOOR BOX SHALL BE 15 1/8"(L)x11 3/16"(W)x4 1/6"(D) NOMINAL, 6-GANG BOX CAPACITY, THREE (3) DUPLEX RECEPTACLES, THREE (3) SINGLE-GANG BLANK DEVICE PLATES, SURFACE STYLE COVER WITH CARPET INSERT AND BLACK FINISH.  
FLOOR BOX: WIREMOLD EFB6S, OR APPROVED EQUAL COVER: WIREMOLD EFB610CTCBK, OR APPROVED EQUAL
4. ROUTE CONDUIT UNDER FLOOR IN THE CONCRETE CHANNEL BELOW. SEE ARCHITECTURAL DRAWING FOR MORE DETAILS.

**2 ENLARGED ELECTRICAL PLAN - ROOM 103**  
E-13 SCALE: 1/4" = 1'-0"



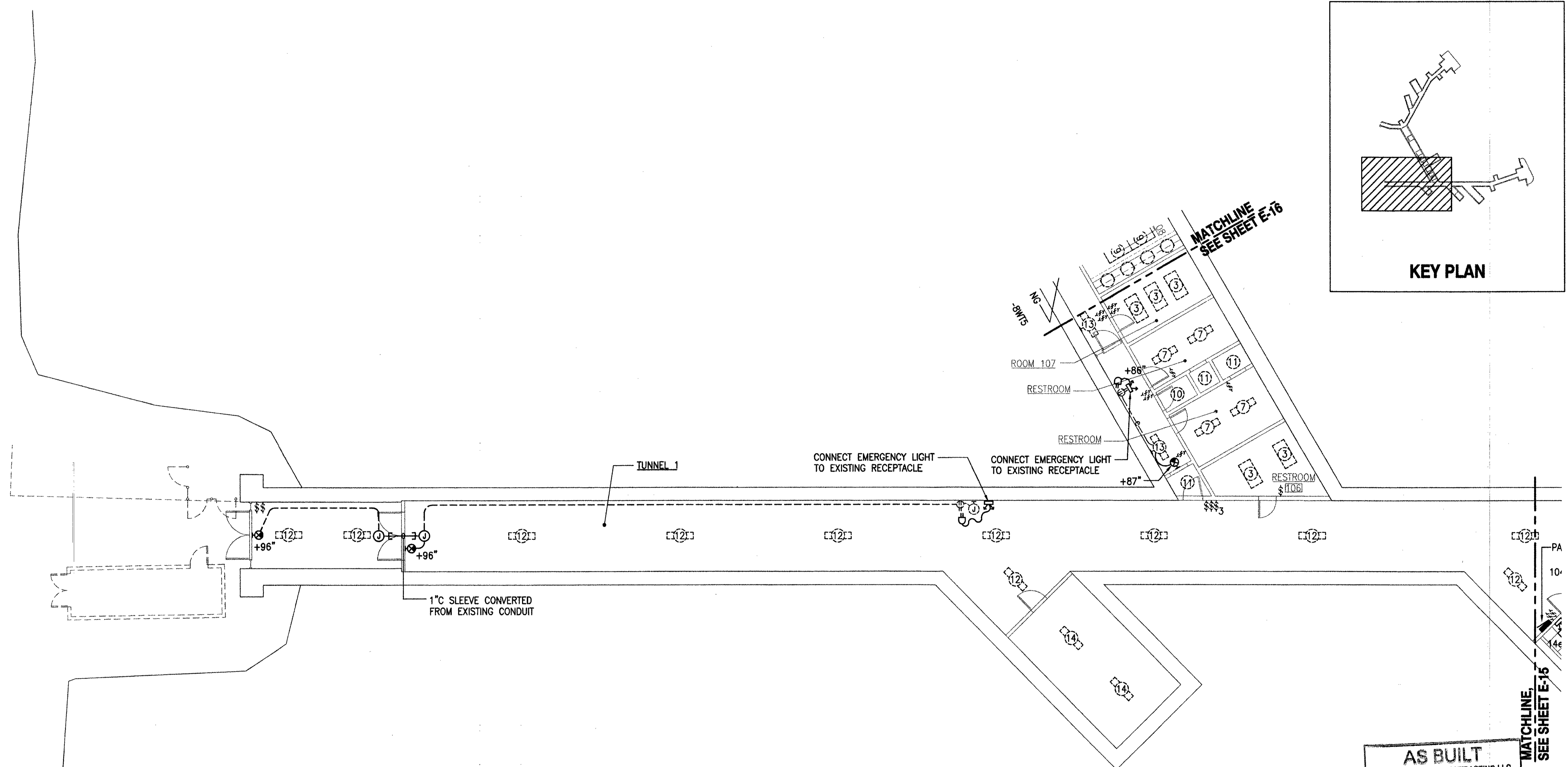
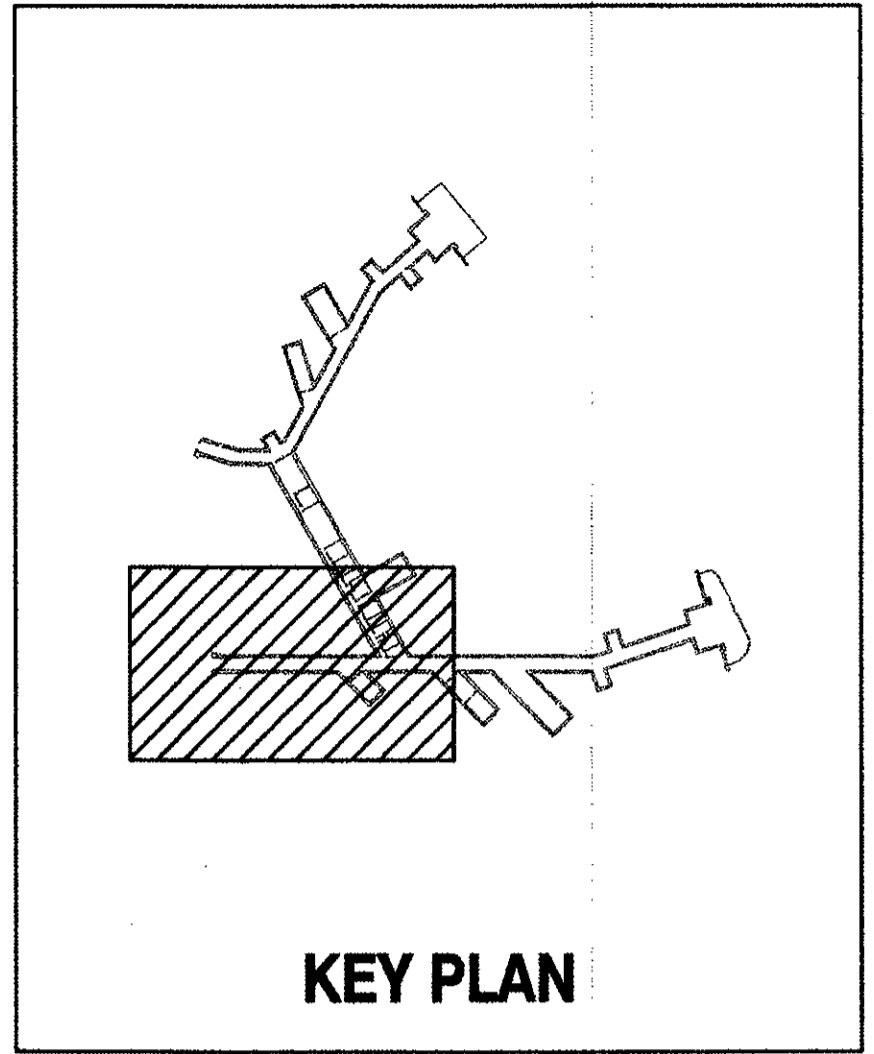
IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

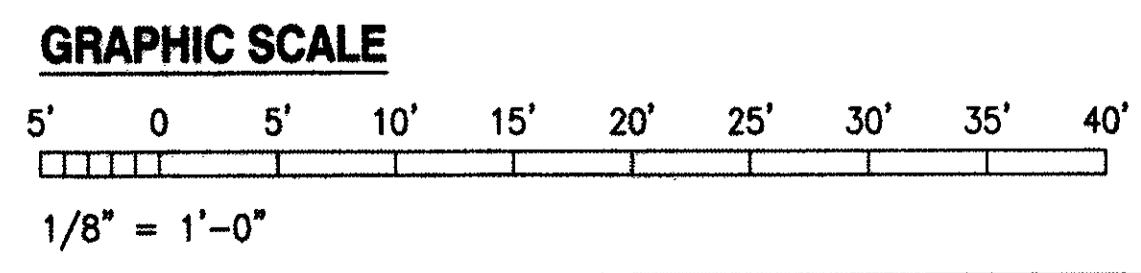
**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
Signature: *Paul A. Paul* 7/11/14  
DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D
PCD 2	PCD NO.2 WALL REMOVAL AND REPAIR	7/27/2012		

		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED:	RP	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE	
DRAWN:	KL		
SAFETY:			
SECURITY:		ENLARGED ELECTRICAL PLANS	
APPROVED:		DATE:	JAN 31, 2011
154 DP / BCE		154 DP / CC	
APPROVED:		SCALE:	AS SHOWN
HAWG / CC		HAWG / COE	
APPROVED:		DATE:	E-13
TAC - HAWAII		154 CES / CEC PROJ ENGR	SHEET 45 of 57



**1 LIGHTING PLAN 1 - NEW WORK**  
**E-14** SCALE: 1/8" = 1'-0"



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 SIGNATURE: *Paul A. Jahn* DATE: 7/10/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

**RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.**

**TIMOTHY S. HIGA**  
 LICENSED PROFESSIONAL ENGINEER  
 No. 5791-E  
 HAWAII, U.S.A.

6-30-11 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Higa*

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: BS  
 DRAWN: KL  
 SAFETY: [ ]  
 SECURITY: [ ]

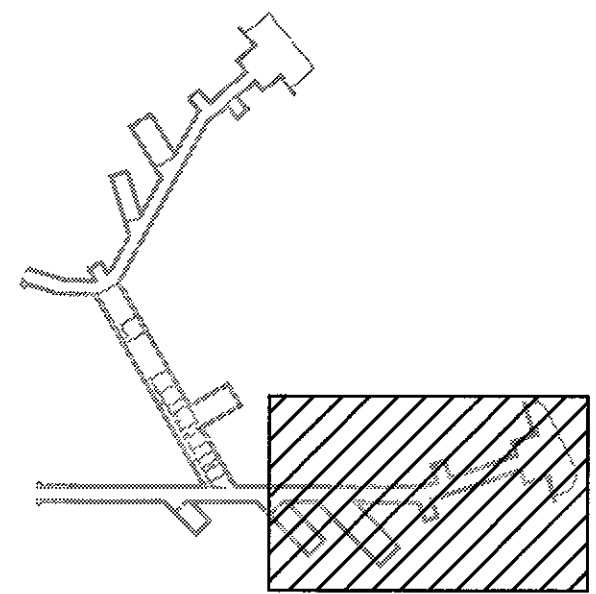
BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

LIGHTING PLAN 1 - NEW WORK

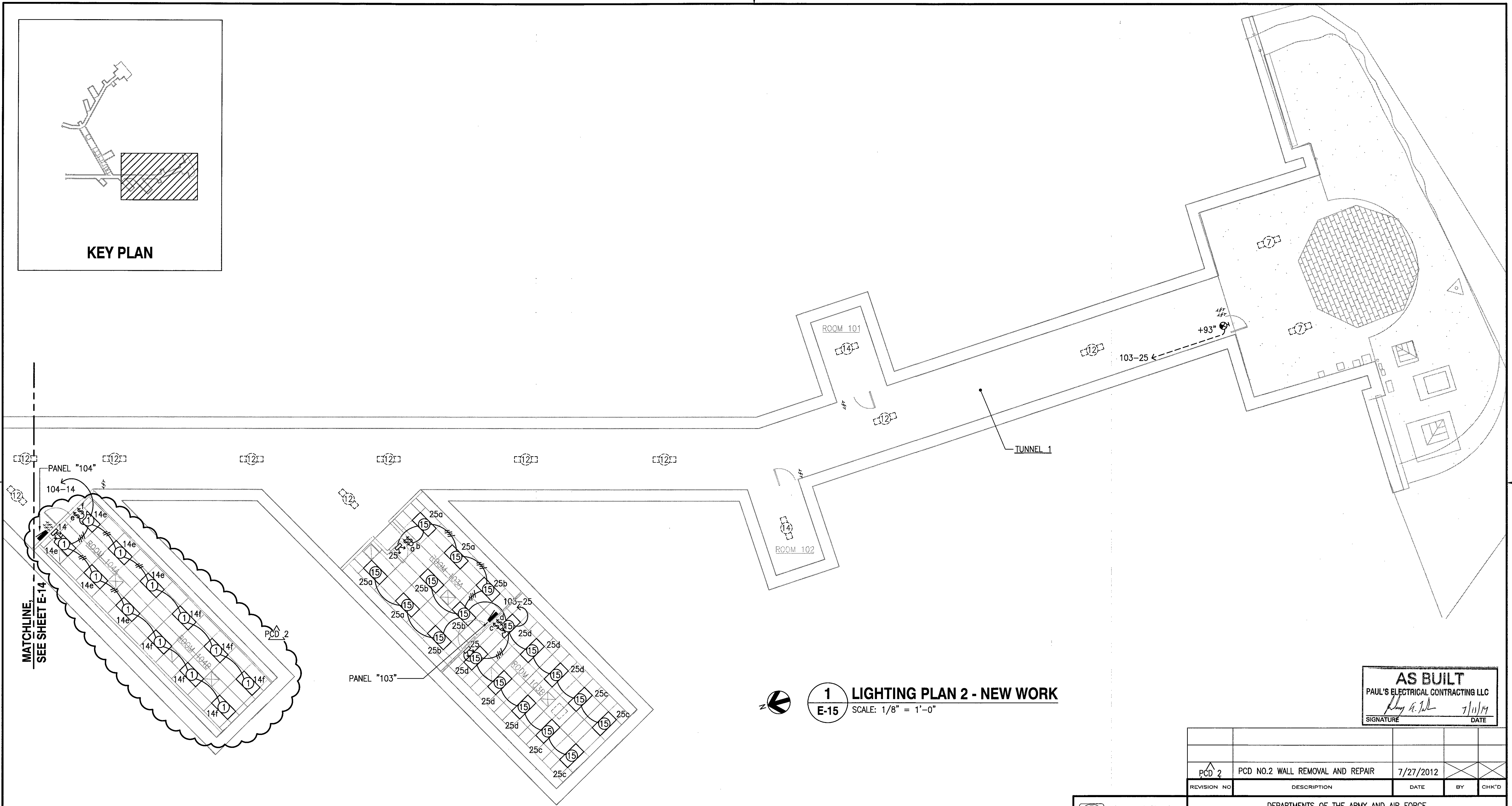
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APPROVED: [ ]	APPROVED: [ ]	DWG # E-14
154 OP / CC	154 OP / BSE	SHEET 46 of 57
APPROVED: [ ]	APPROVED: [ ]	
154 OP / HAWAII	154 OP / CC PROJ ENGR	

6/20/11-13:29 Y:\34\3401\134-11 E14-E17.dwg





KEY PLAN



**1 LIGHTING PLAN 2 - NEW WORK**  
**E-15** SCALE: 1/8" = 1'-0"

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 SIGNATURE: *Paul A. De...* DATE: 7/10/11

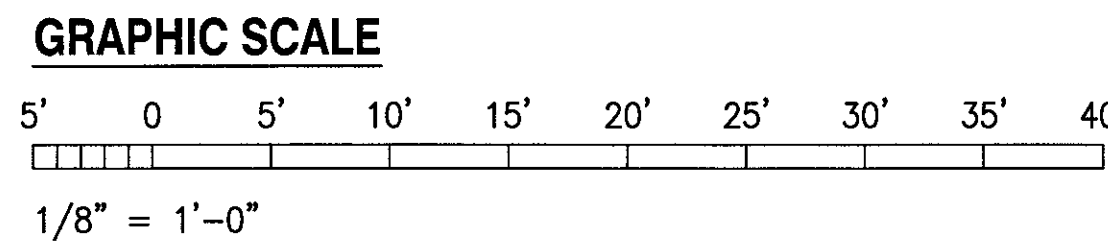
REVISION NO	DESCRIPTION	DATE	BY	CHK'D
PCD 2	PCD NO.2 WALL REMOVAL AND REPAIR	7/27/2012		

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

TIMOTHY S. HICK  
 LICENSED PROFESSIONAL ENGINEER  
 No. 5791-E  
 HAWAII, U.S.A.  
 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Hick*

DESIGNED: BS	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE
DRAWN: KL	
SAFETY:	LIGHTING PLAN 2 - NEW WORK
SECURITY:	
APPROVED:	DATE: JAN 31, 2011
15A GP / BCE	15A GP / CC
APPROVED:	SCALE: AS SHOWN
15A GP / CC	DWG #
APPROVED:	E-15
15A GES / CEC PROJ ENGR	SHEET 47 of 57

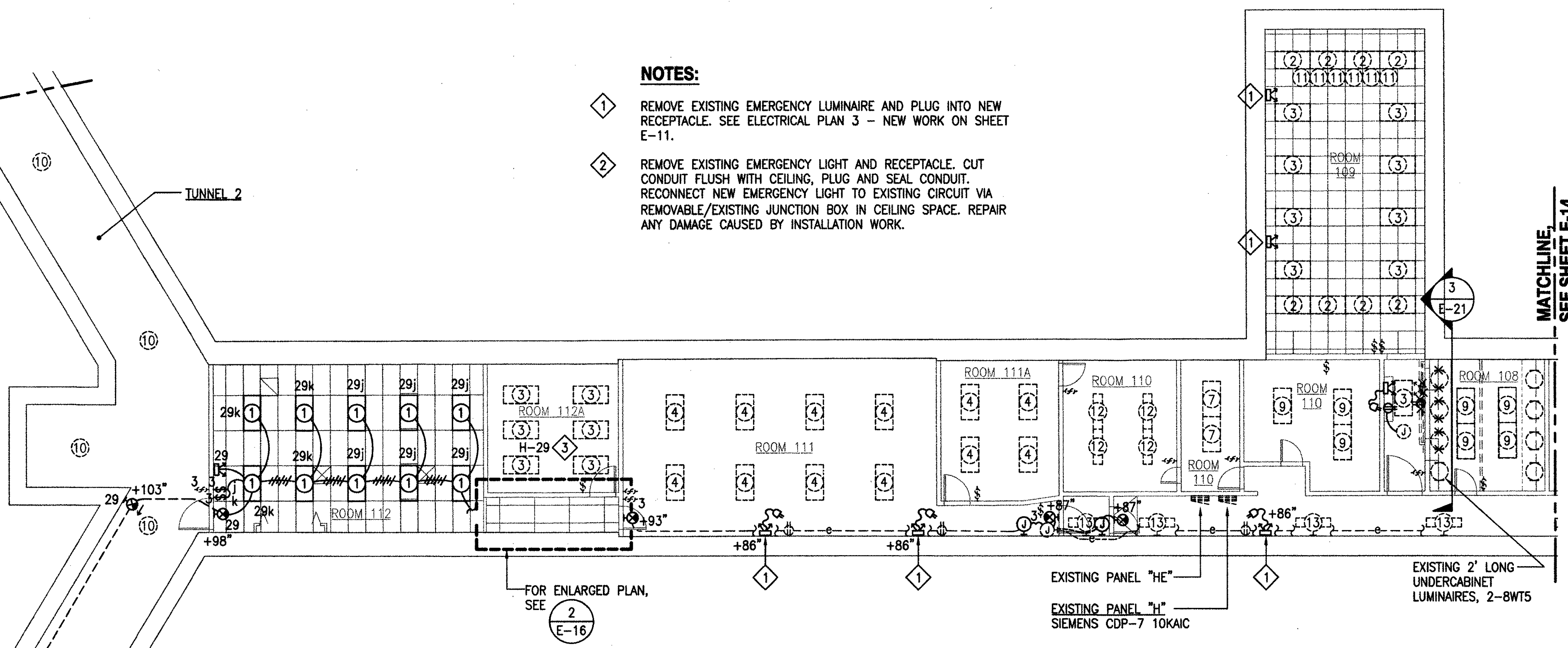
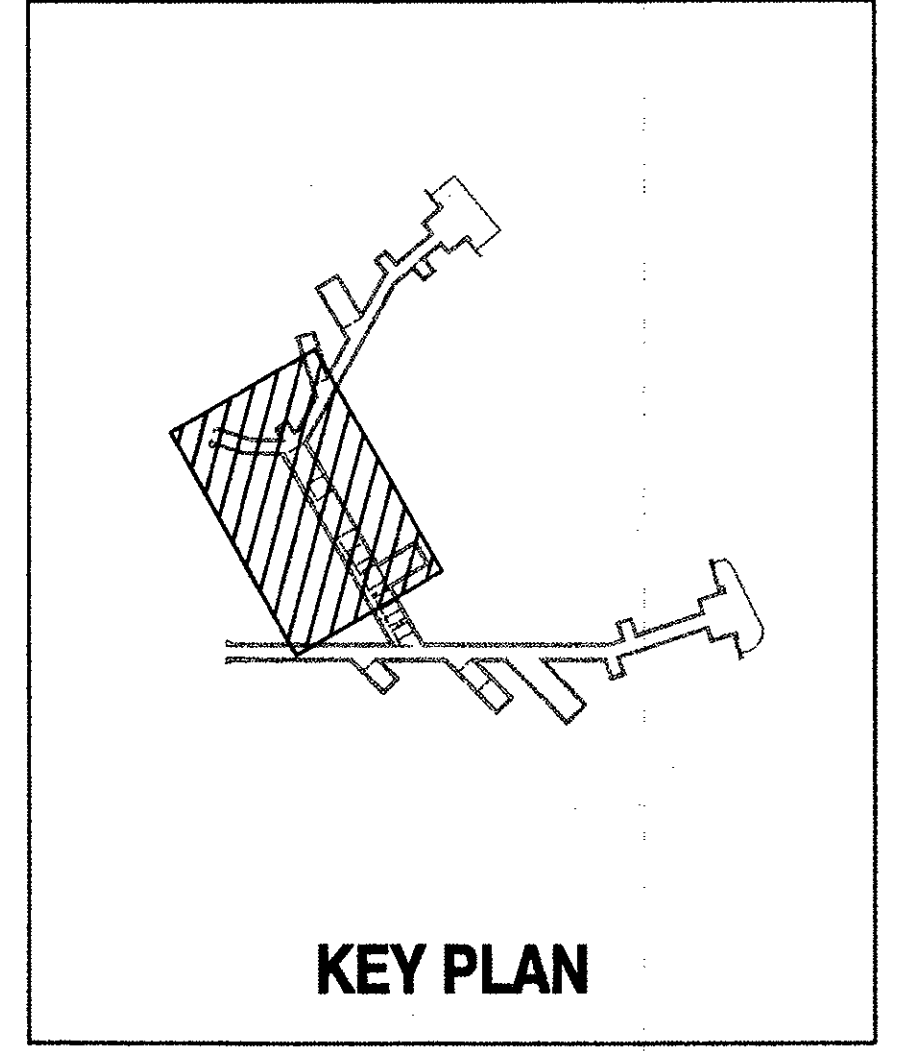


IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY

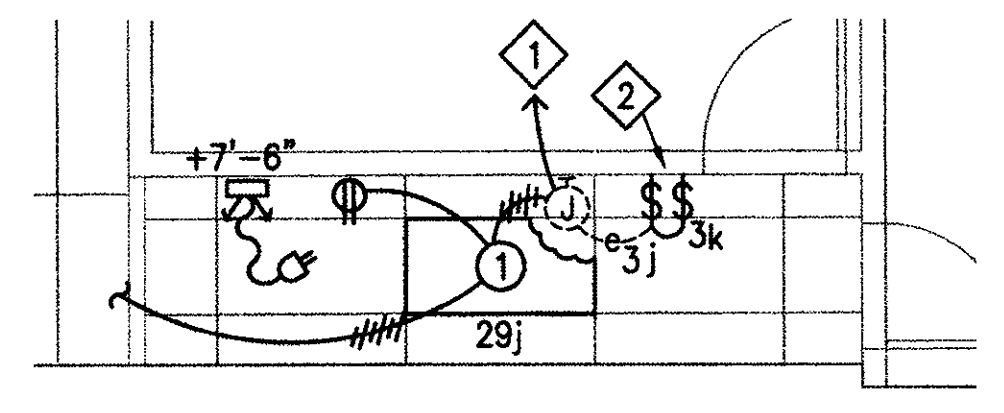
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

MATCHLINE, SEE SHEET E-17

- NOTES:**
- ① REMOVE EXISTING EMERGENCY LUMINAIRE AND PLUG INTO NEW RECEPTACLE. SEE ELECTRICAL PLAN 3 - NEW WORK ON SHEET E-11.
  - ② REMOVE EXISTING EMERGENCY LIGHT AND RECEPTACLE. CUT CONDUIT FLUSH WITH CEILING, PLUG AND SEAL CONDUIT. RECONNECT NEW EMERGENCY LIGHT TO EXISTING CIRCUIT VIA REMOVABLE/EXISTING JUNCTION BOX IN CEILING SPACE. REPAIR ANY DAMAGE CAUSED BY INSTALLATION WORK.

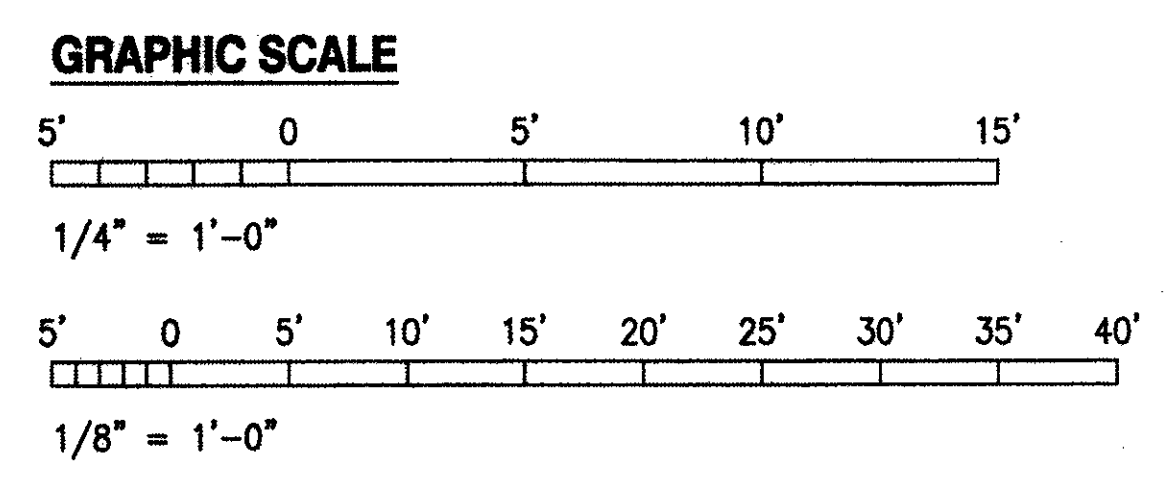


**1 LIGHTING PLAN 3 - NEW WORK**  
E-16 SCALE: 1/8" = 1'-0"



- NOTES:**
- ① CONTRACTOR TO VERIFY EXISTING CIRCUIT AND HOMERUN. REUSE EXISTING CIRCUIT AND HOMERUN FOR NEW LIGHT SYSTEM.
  - ② REUSE EXISTING SWITCH OUTLET BOX FOR NEW SWITCHES.

PROVIDE BLANK COVER PLATE TO EXISTING OUTLET BOX  
PROVIDE POWER TO NEW LUMINAIRE VIA EXISTING OUTLET BOX



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
7/11/11  
DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

**RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.**

**TIMOTHY S. HIGA**  
LICENSED PROFESSIONAL ENGINEER  
No. 5791-E  
HAWAII, U.S.A.

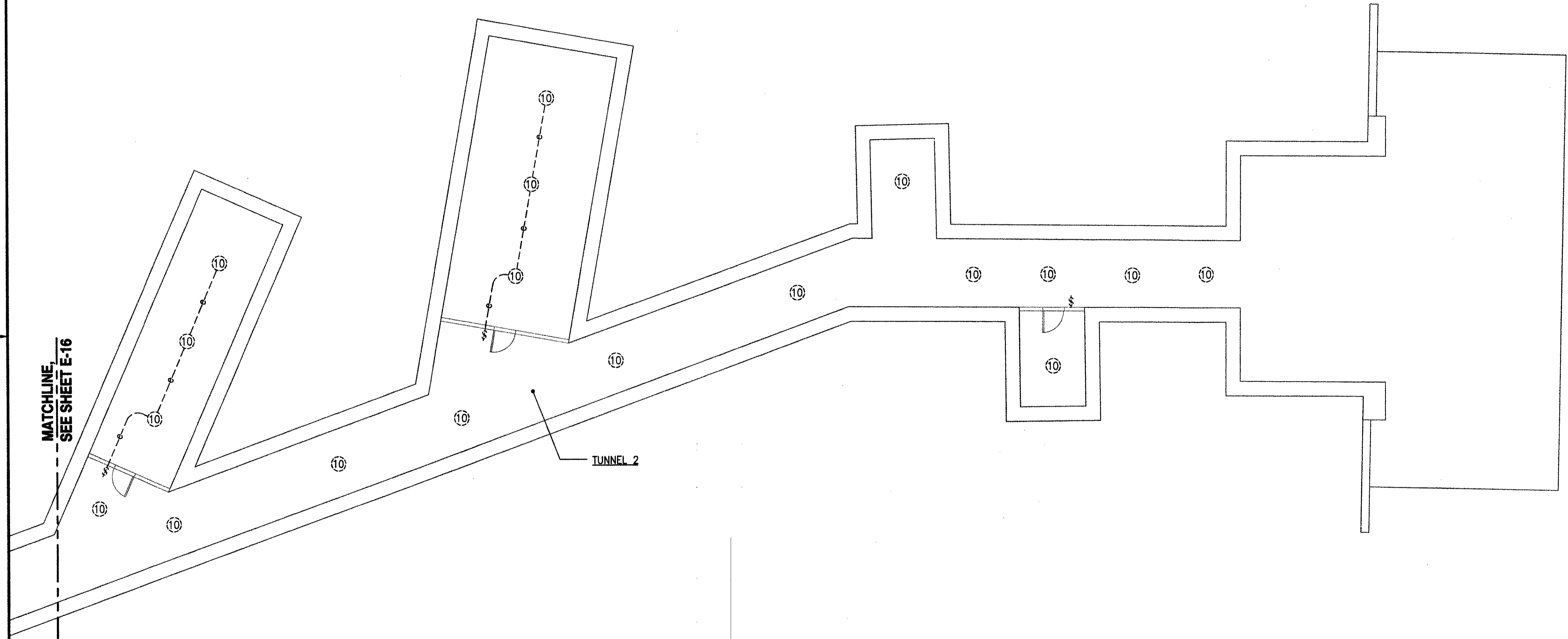
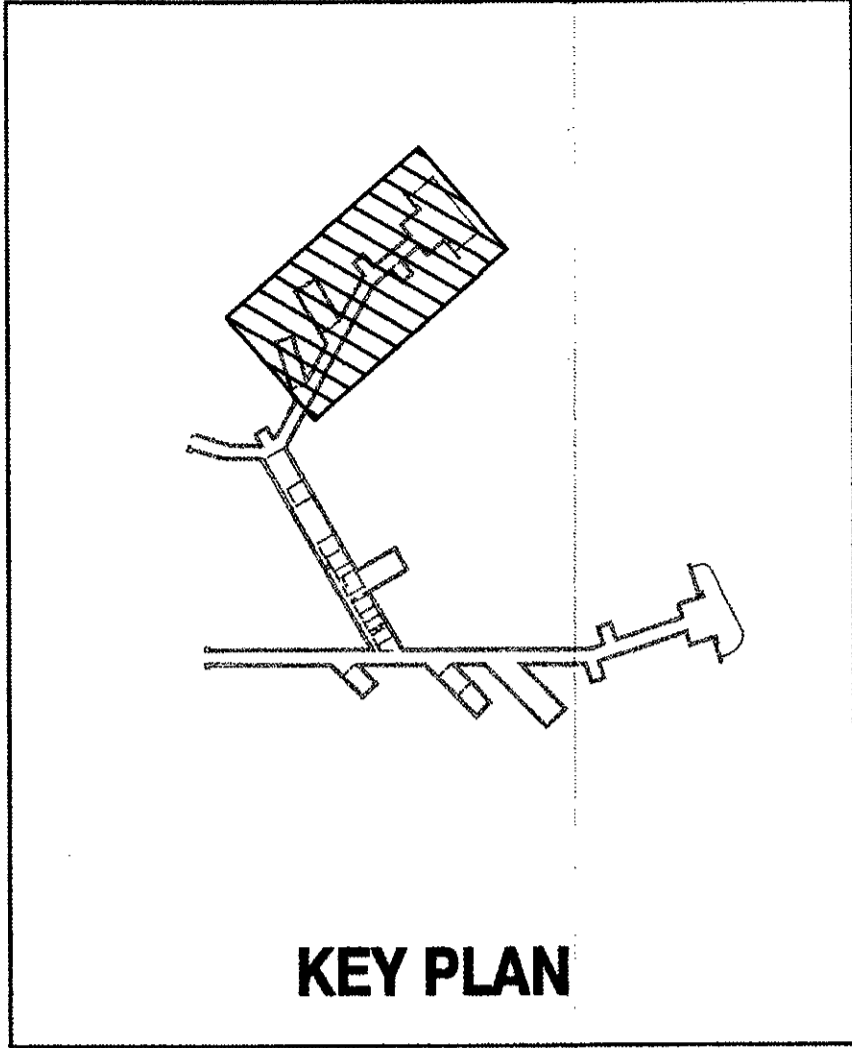
DESIGNED: BS  
DRAWN: KL  
SAFETY:  
SECURITY:

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

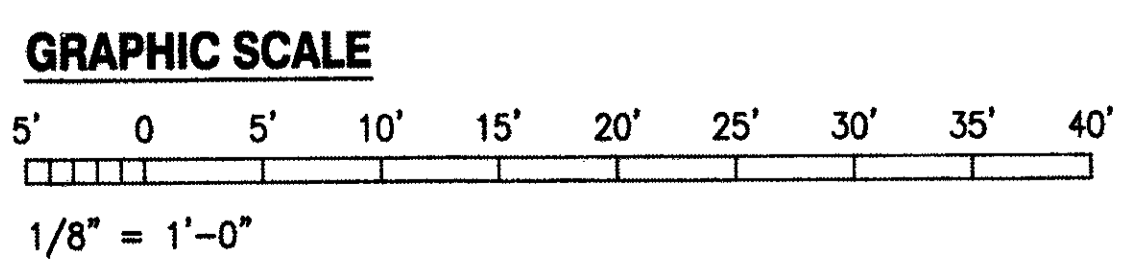
BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

LIGHTING PLAN 3 - NEW WORK

DATE: JAN 31, 2011  
SCALE: AS SHOWN  
SHEET: 48 OF 57



**1 LIGHTING PLAN 4 - NEW WORK**  
**E-17** SCALE: 1/8" = 1'-0"



IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT - SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul A. Paul* 7/13/14  
 SIGNATURE DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

**RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.**

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: BS  
 DRAWN: KL  
 CHECKED: KL  
 SECURITY: KL

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

LIGHTING PLAN 4 - NEW WORK

APPROVED: [Signature] DATE: JAN 31, 2011

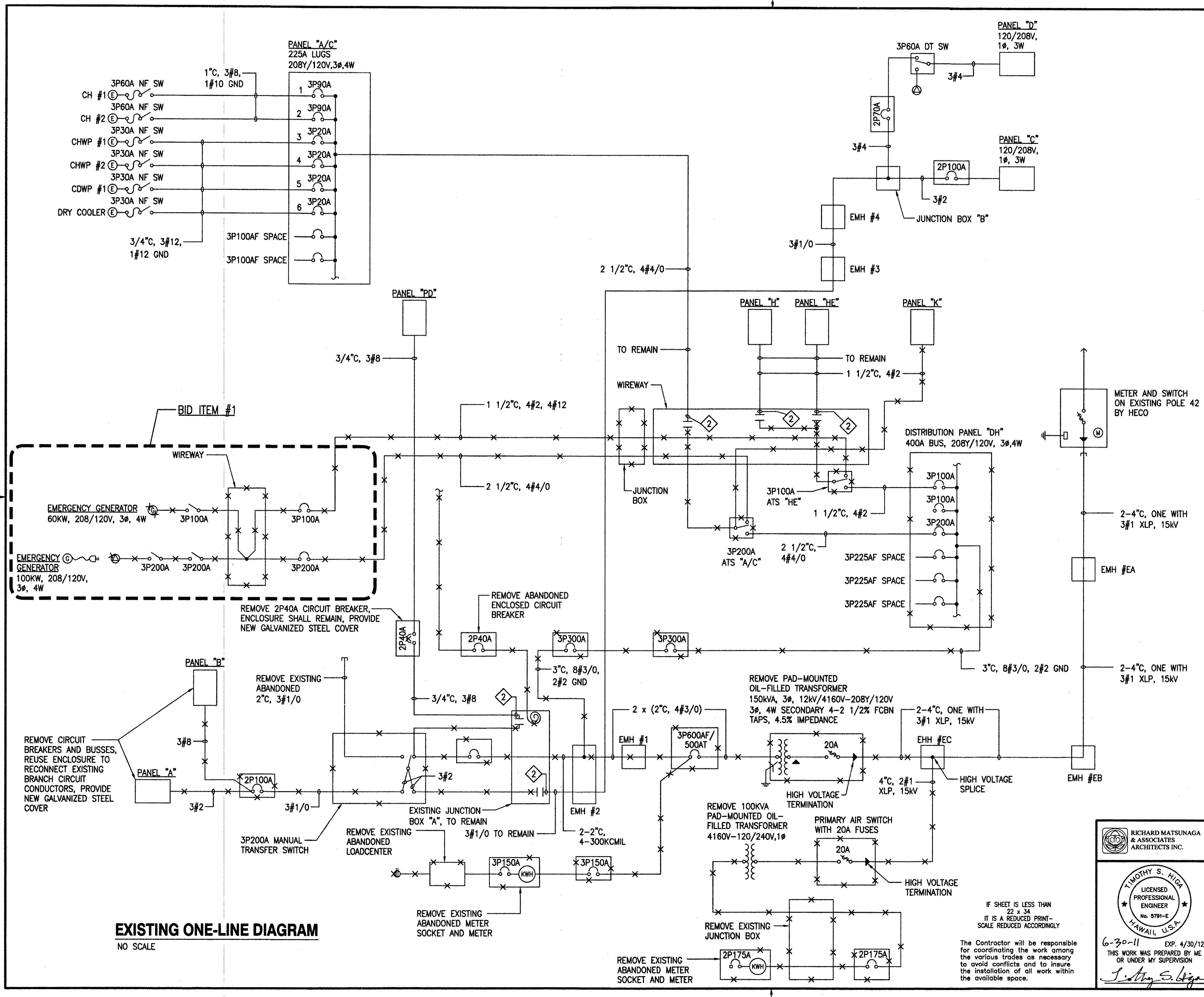
1/4" GP / B/E APPROVED: [Signature] SCALE: AS SHOWN

1/4" GP / CC APPROVED: [Signature] DWG # E-17

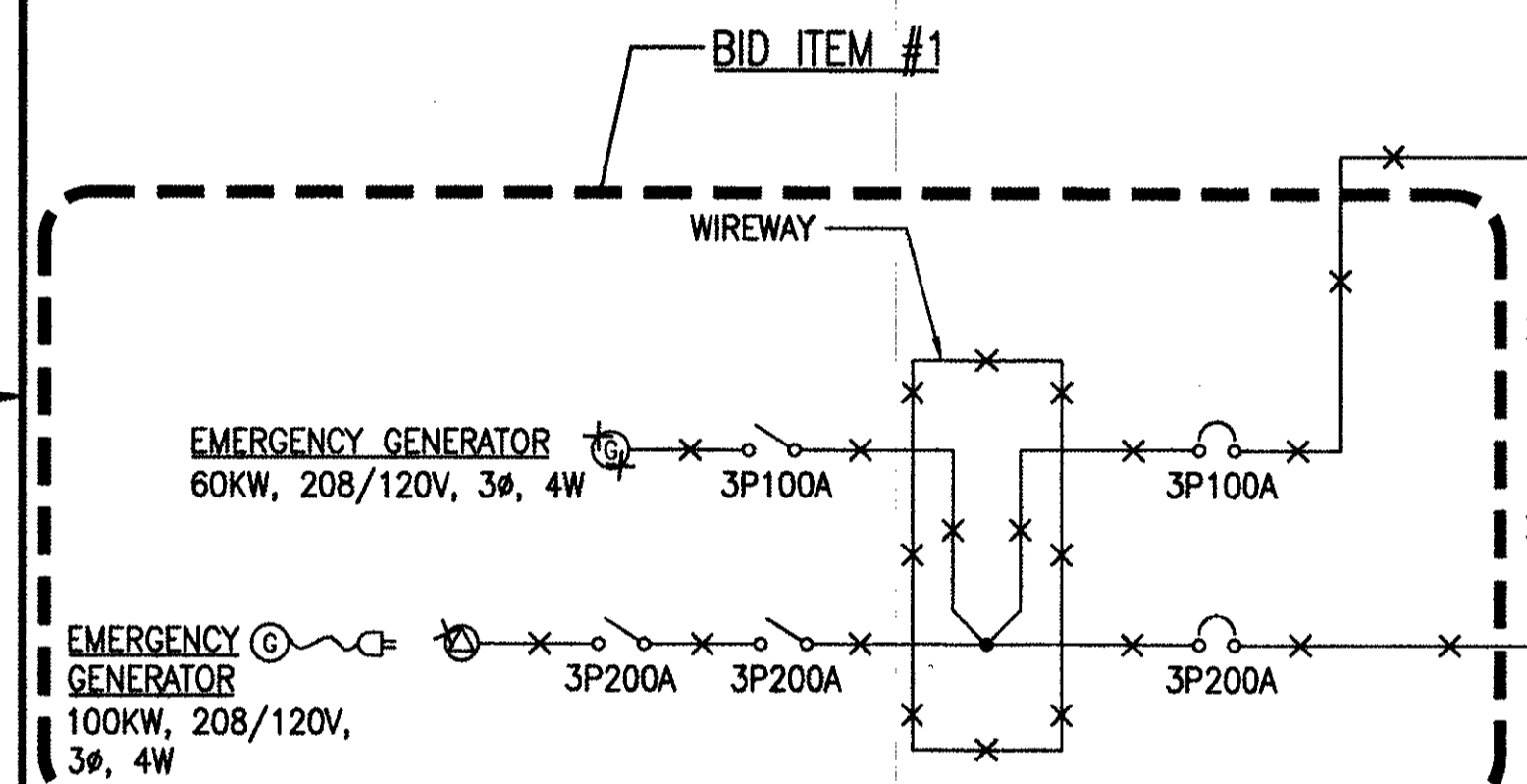
1/4" GP / CC APPROVED: [Signature] SHEET 49 OF 57

TIMOTHY S. HIGA  
 LICENSED PROFESSIONAL ENGINEER  
 No. 5791-E  
 HAWAII, U.S.A.

C-30-11 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Higa*



- NOTES:**
- PHASING OF ELECTRICAL WORK IS REQUIRED, SEE GENERAL ELECTRICAL NOTE 13 ON SHEET E-2.
  - RECONNECT EXISTING FEEDER, SEE NEW ONE-LINE DIAGRAM ON SHEET E-19.



**EXISTING ONE-LINE DIAGRAM**  
NO SCALE

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul S. Paul* DATE: 7/0/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

**RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.**

**TIMOTHY S. HIGGS LICENSED PROFESSIONAL ENGINEER No. 5791-E HAWAII, U.S.A.**

6-30-11 EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Higgs*

**DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII**

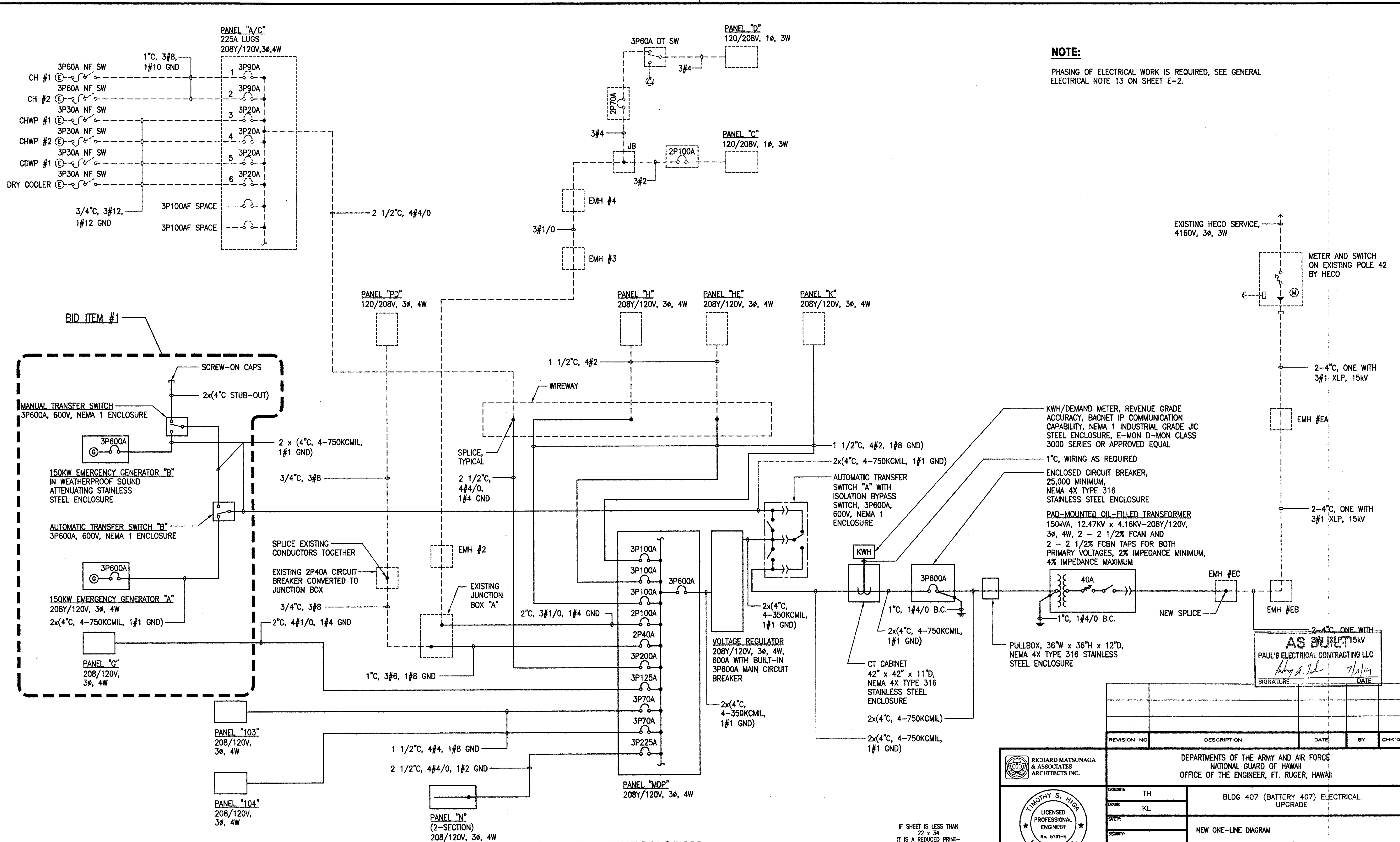
**BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE**

**EXISTING ONE-LINE DIAGRAM**

DESIGNED: TH	DATE: JAN 31, 2011
DRAWN: KL	SCALE: AS SHOWN
CHECKED: [ ]	SHEET: E-18
APPROVED: [ ]	OF 57

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.



**NOTE:**

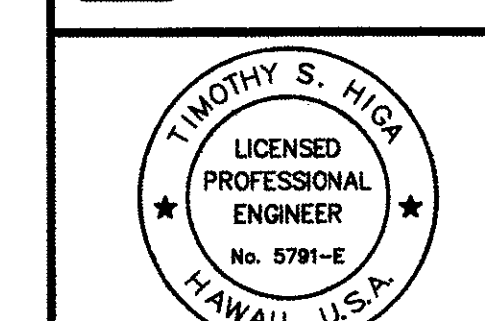
PHASING OF ELECTRICAL WORK IS REQUIRED, SEE GENERAL ELECTRICAL NOTE 13 ON SHEET E-2.

**NEW ONE-LINE DIAGRAM**

NO SCALE (SOLID LINES INDICATE NEW AND DASHED LINES INDICATE EXISTING)

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.



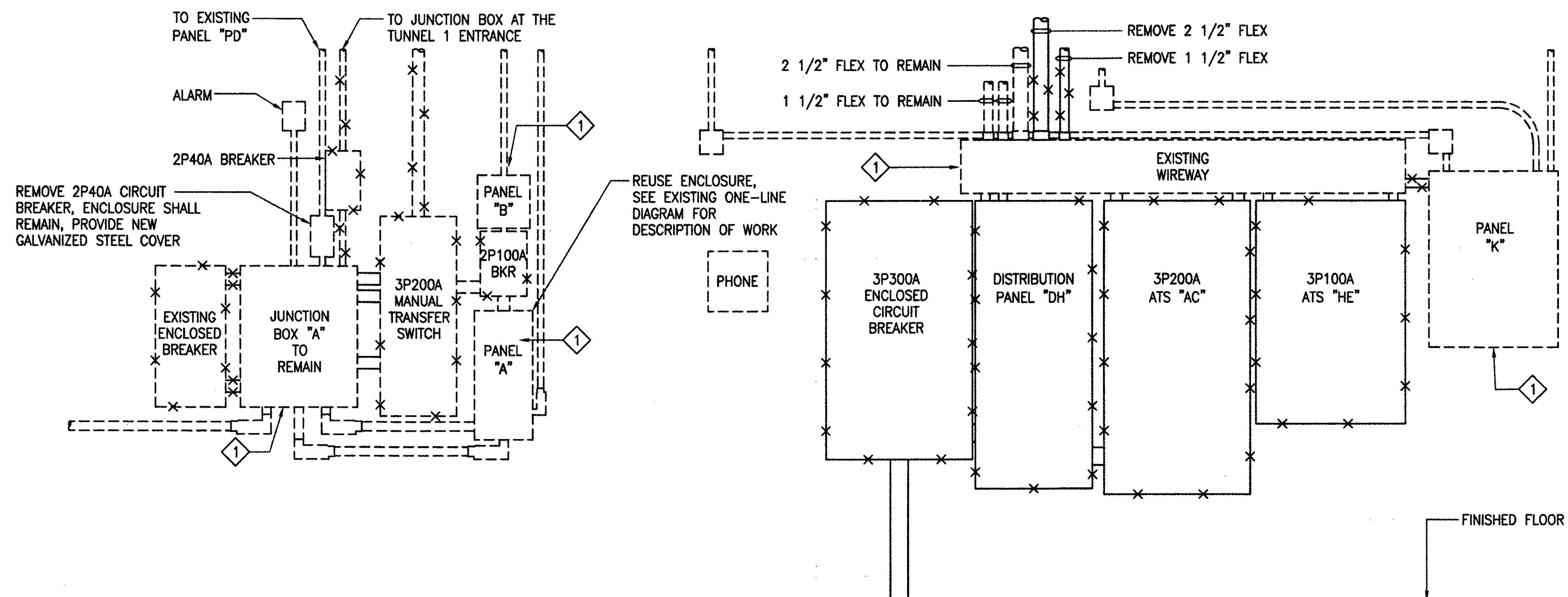
6-30-11 EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Higa*

REVISION NO.	DESCRIPTION	DATE	BY	CHK'D

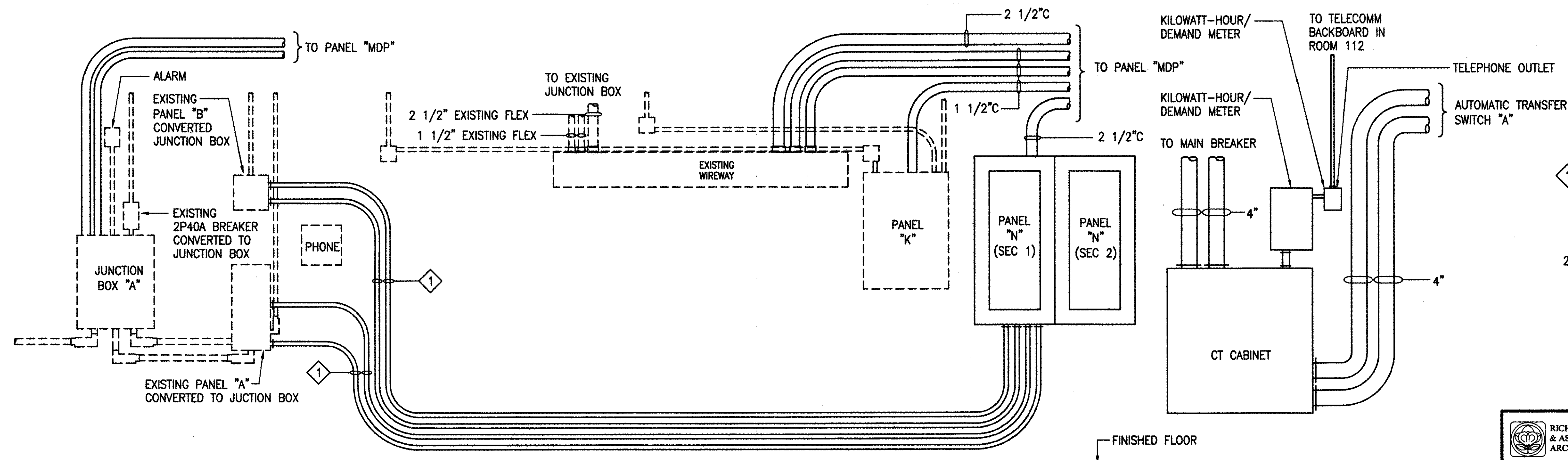
RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.		DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
DESIGNED: TH	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE		
DRAWN: KL			
NEW ONE-LINE DIAGRAM			
APPROVED: [Signature]	APPROVED: [Signature]	DATE: JAN 31, 2011	
154 OP / BSE	154 OP / CC	SCALE: AS SHOWN	
APPROVED: [Signature]	APPROVED: [Signature]		
NAME / CC	NAME / CC	DWG #	E-19
APPROVED: [Signature]	APPROVED: [Signature]		
T&E - HAWAII	154 CES / DEC PROJ ENGR	SHEET	51 of 57

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
Signature: *Paul J. ...* Date: 7/21/11



- NOTES:**
- 1. CAP UNUSED HOLE/KNOCKOUTS AFTER CONDUIT REMOVAL.
  - 2. PHASING OF ELECTRICAL WORK IS REQUIRED, SEE GENERAL ELECTRICAL NOTE 13 ON SHEET E-2.

**1 EXISTING EQUIPMENT ELEVATION "A" - TUNNEL 1**  
 E-20 NOT TO SCALE (SOLID LINES INDICATE NEW AND DASHED LINES INDICATE EXISTING)



- NOTES:**
- 1. NOT ALL CONDUITS ARE SHOWN. PROVIDE ADDITIONAL CONDUITS TO RELOCATE EXISTING LOAD FROM EXISTING PANEL "A" AND PANEL "B" TO NEW PANEL "N". MAXIMUM 3 CIRCUITS PER CONDUIT. SEE PANEL SCHEDULE FOR PANEL "N" FOR EXISTING CIRCUIT RELOCATING.
  - 2. PHASING OF ELECTRICAL WORK IS REQUIRED, SEE GENERAL ELECTRICAL NOTE 13 ON SHEET E-2.

**AS BUILT**  
 PAUL'S ELECTRICAL CONTRACTING LLC  
 SIGNATURE: *Paul's Electrical* DATE: 7/1/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

DEPARTMENTS OF THE ARMY AND AIR FORCE  
 NATIONAL GUARD OF HAWAII  
 OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: RP  
 DRAWN: KL  
 SAFETY: [blank]  
 SECURITY: [blank]

DATE: JAN 31, 2011  
 SCALE: AS SHOWN  
 SHEET: E-20 of 52

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

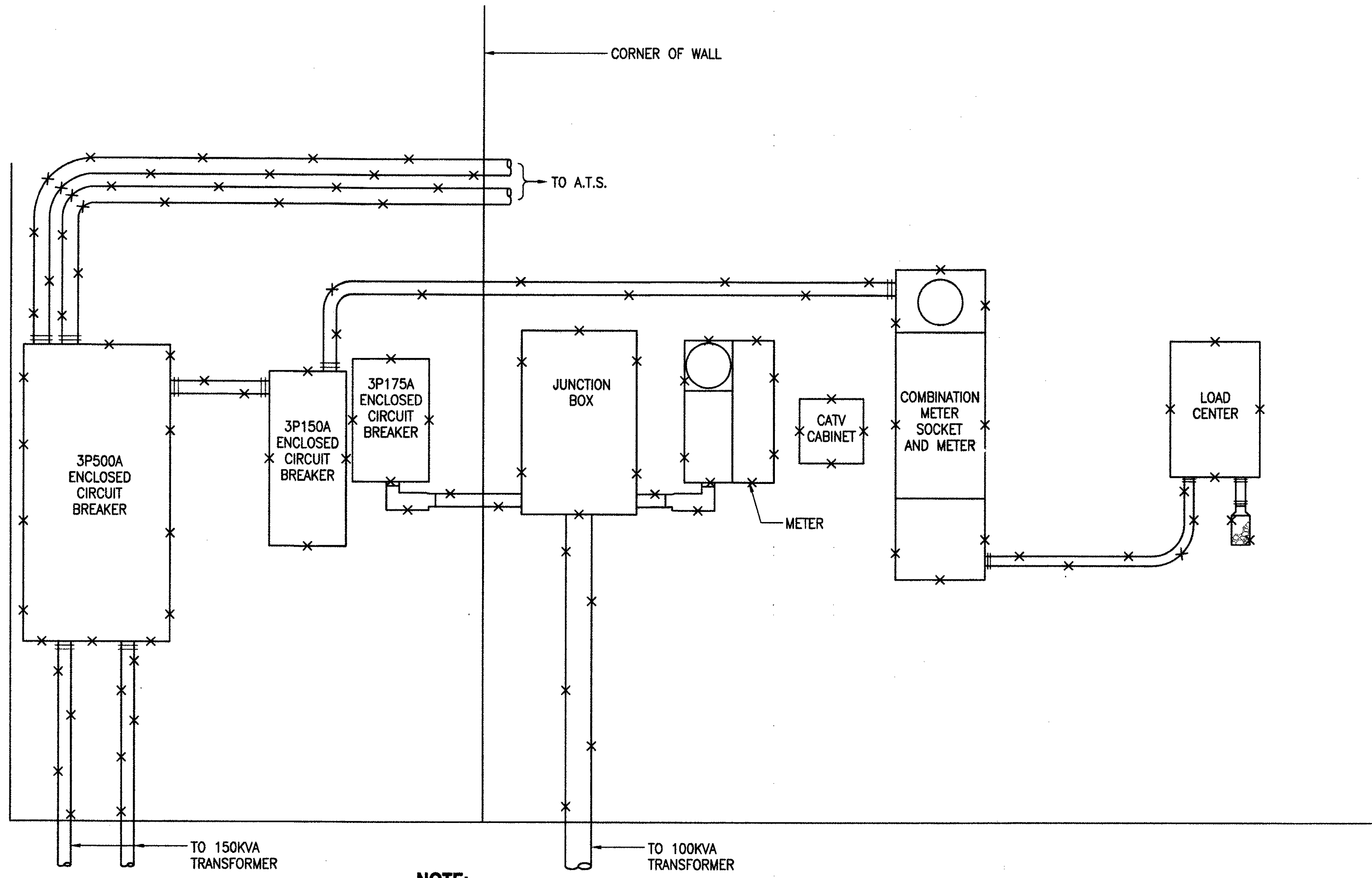
TIMOTHY S. HIGA  
 LICENSED PROFESSIONAL ENGINEER  
 No. 5791-E  
 HAWAII, U.S.A.

6-30-11 EXP. 4/30/12  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Higa*

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

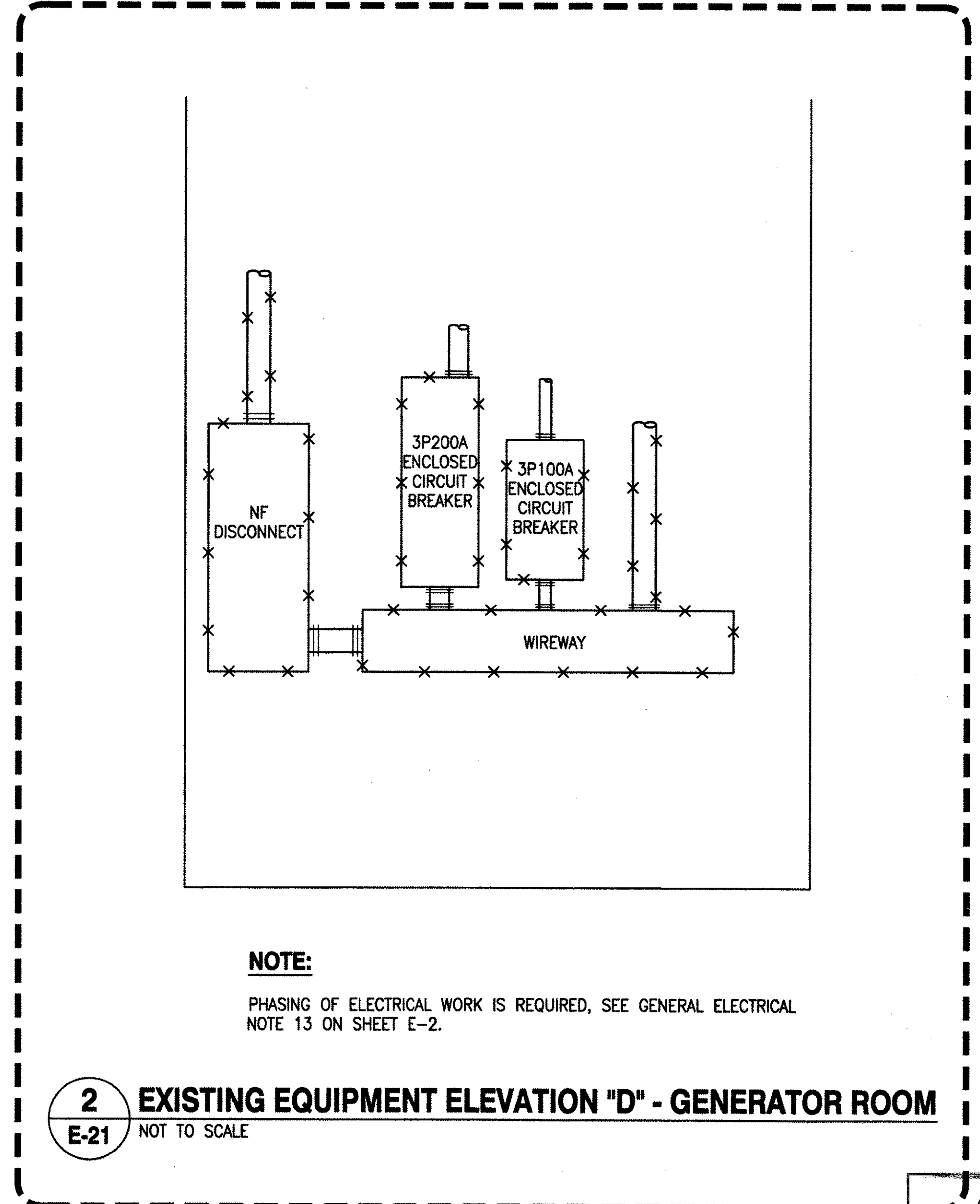
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

**2 EQUIPMENT ELEVATION "B" - TUNNEL 1**  
 E-20 NOT TO SCALE (SOLID LINES INDICATE NEW AND DASHED LINES INDICATE EXISTING)



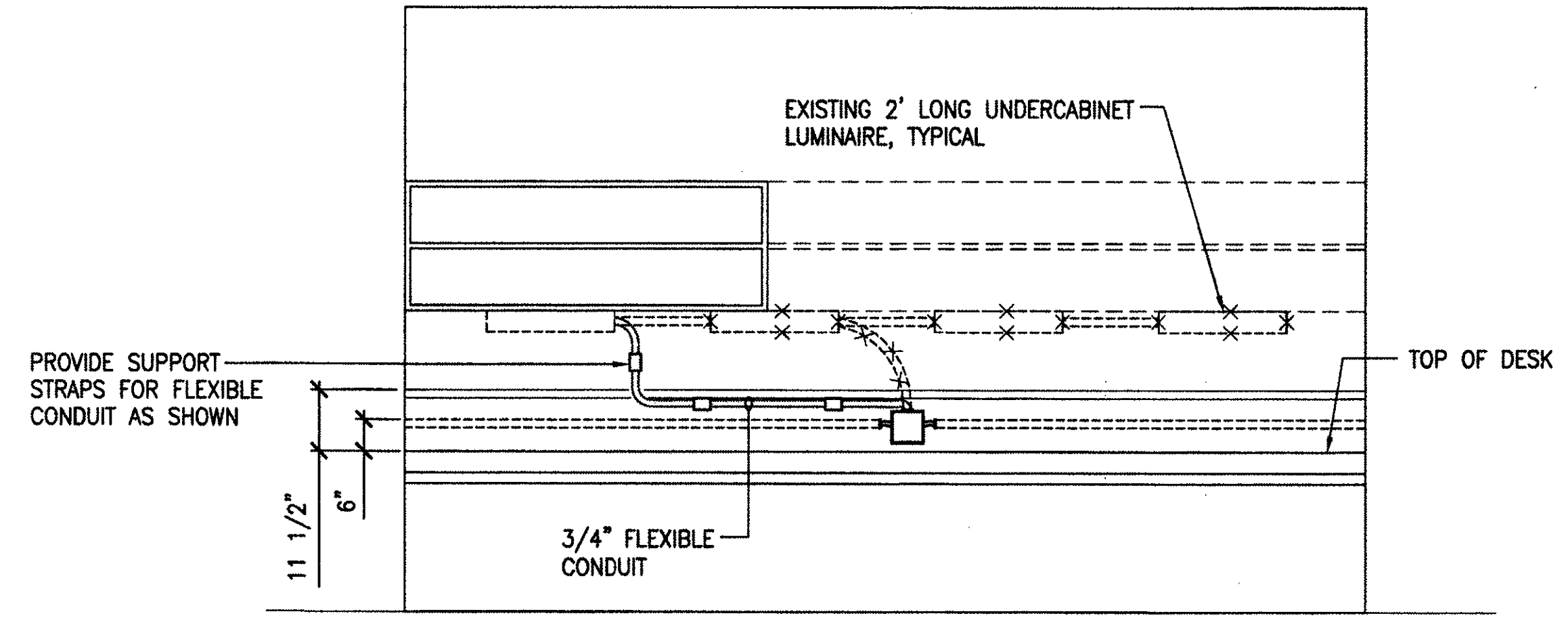
**NOTE:**  
PHASING OF ELECTRICAL WORK IS REQUIRED, SEE GENERAL ELECTRICAL NOTE 13 ON SHEET E-2.

**1 EXISTING ELECTRICAL SERVICE EQUIPMENT ELEVATION "C"**  
E-21 NOT TO SCALE



**NOTE:**  
PHASING OF ELECTRICAL WORK IS REQUIRED, SEE GENERAL ELECTRICAL NOTE 13 ON SHEET E-2.

**2 EXISTING EQUIPMENT ELEVATION "D" - GENERATOR ROOM**  
E-21 NOT TO SCALE



**NOTE:**  
RECONNECT EXISTING UNDERCABINET LUMINAIRE TO EXISTING CIRCUIT VIA FLEXIBLE CONDUIT.

**3 EXISTING INTERIOR ELEVATION - ROOM 108**  
E-21 SCALE: 1/2" = 1'-0"

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul A. Paul* DATE: 7/11/11

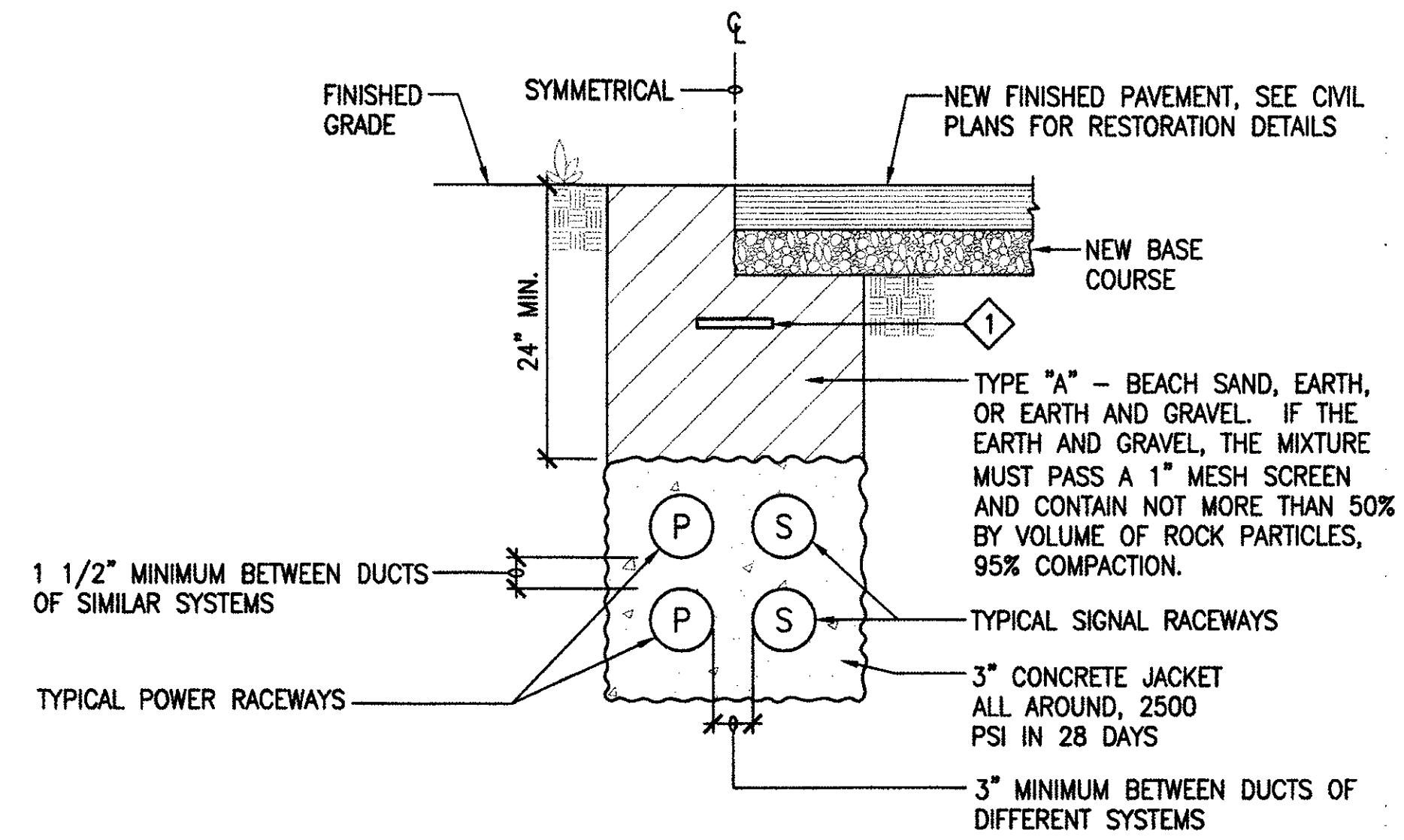
BID ITEM #1

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

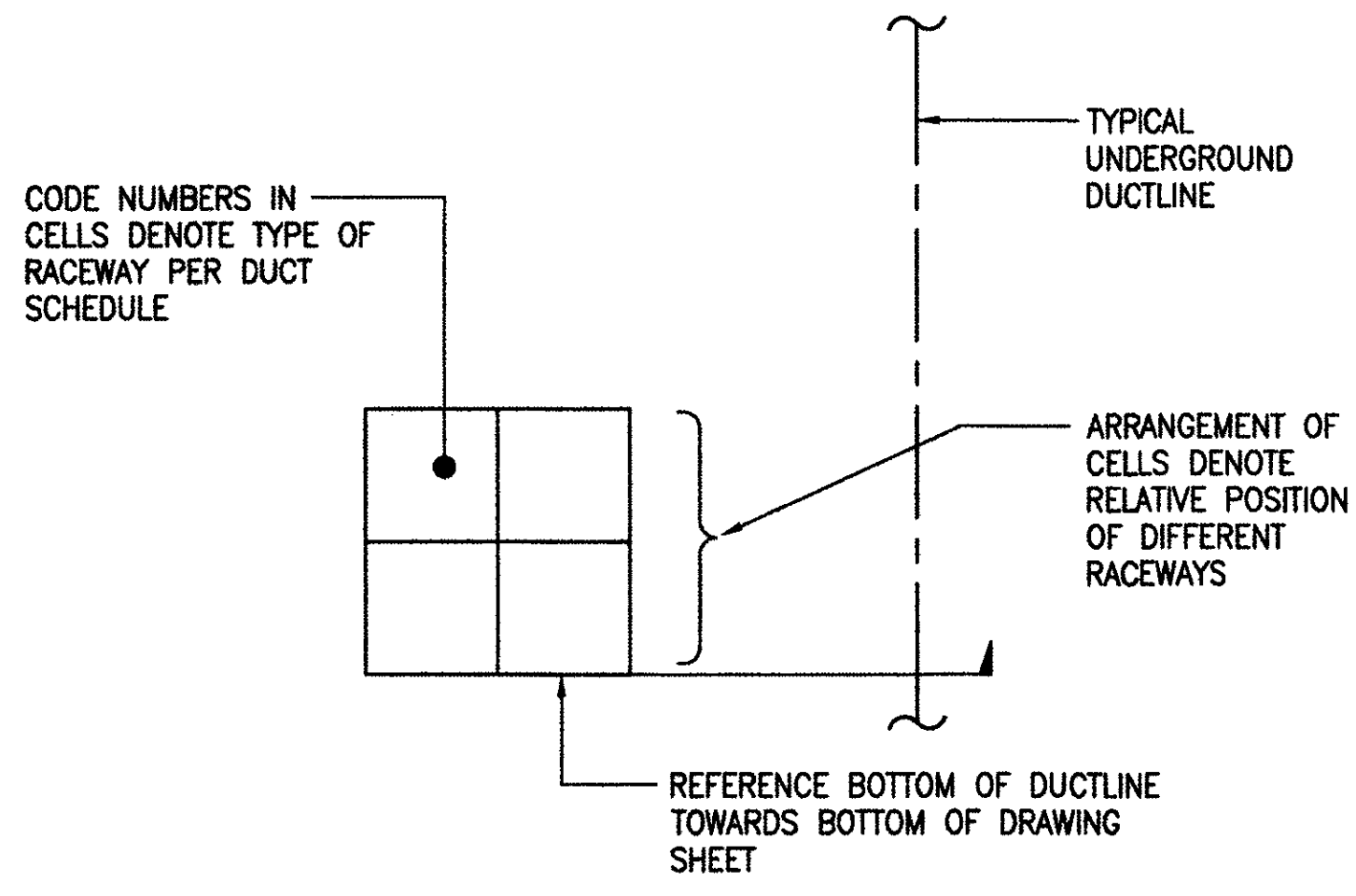
	DEPARTMENTS OF THE ARMY AND AIR FORCE NATIONAL GUARD OF HAWAII OFFICE OF THE ENGINEER, FT. RUGER, HAWAII	
	DESIGNED: RP DRAWN: KL CHECKED: [blank] SECURITY: [blank]	BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE  EQUIPMENT ELEVATIONS
	APPROVED: [blank] DATE: JAN 31, 2011	SCALE: AS SHOWN SHEET: E-21 OF 53

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

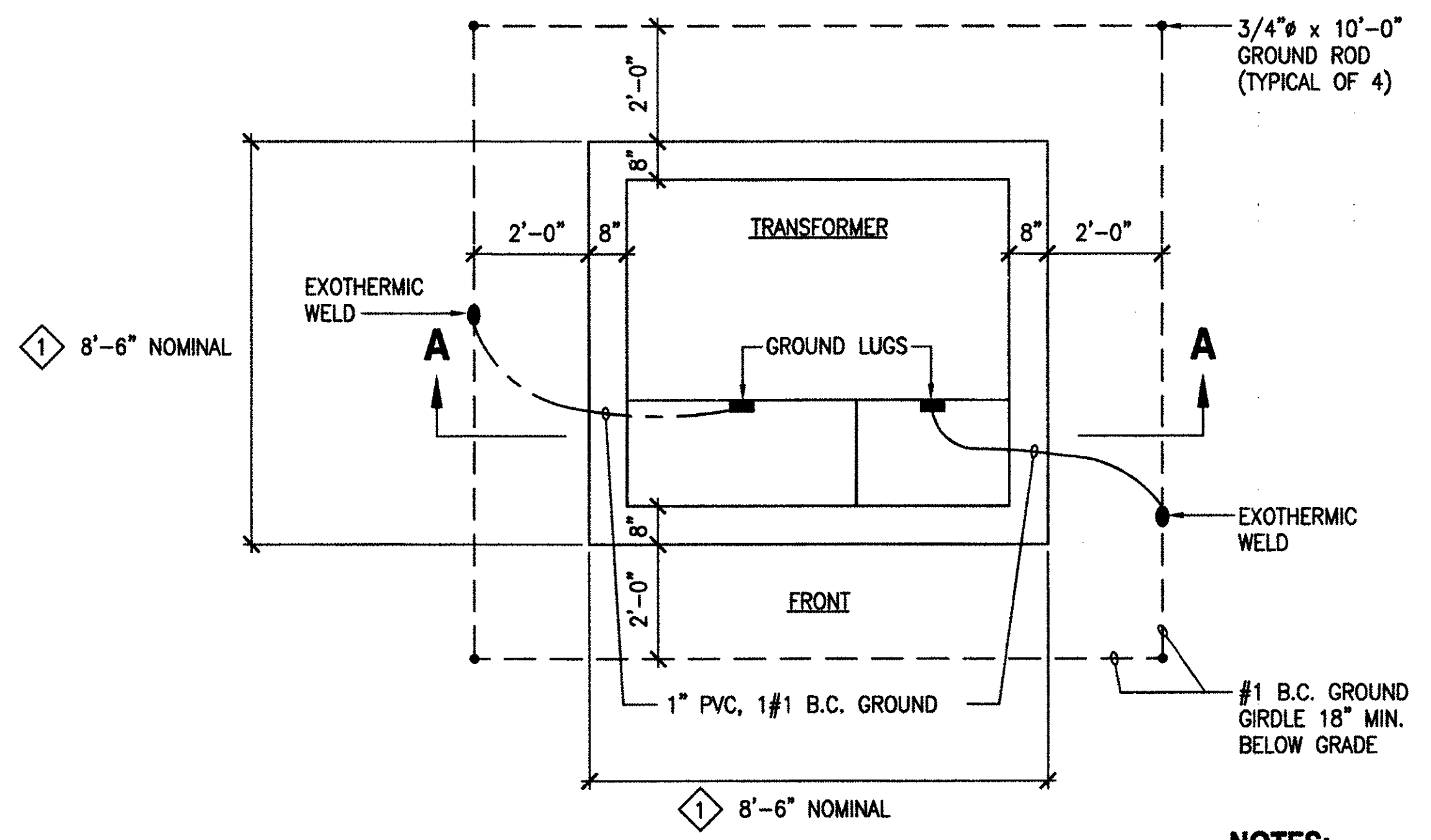


**1 ELECTRICAL DUCT SECTION DETAIL**  
E-22 NOT TO SCALE



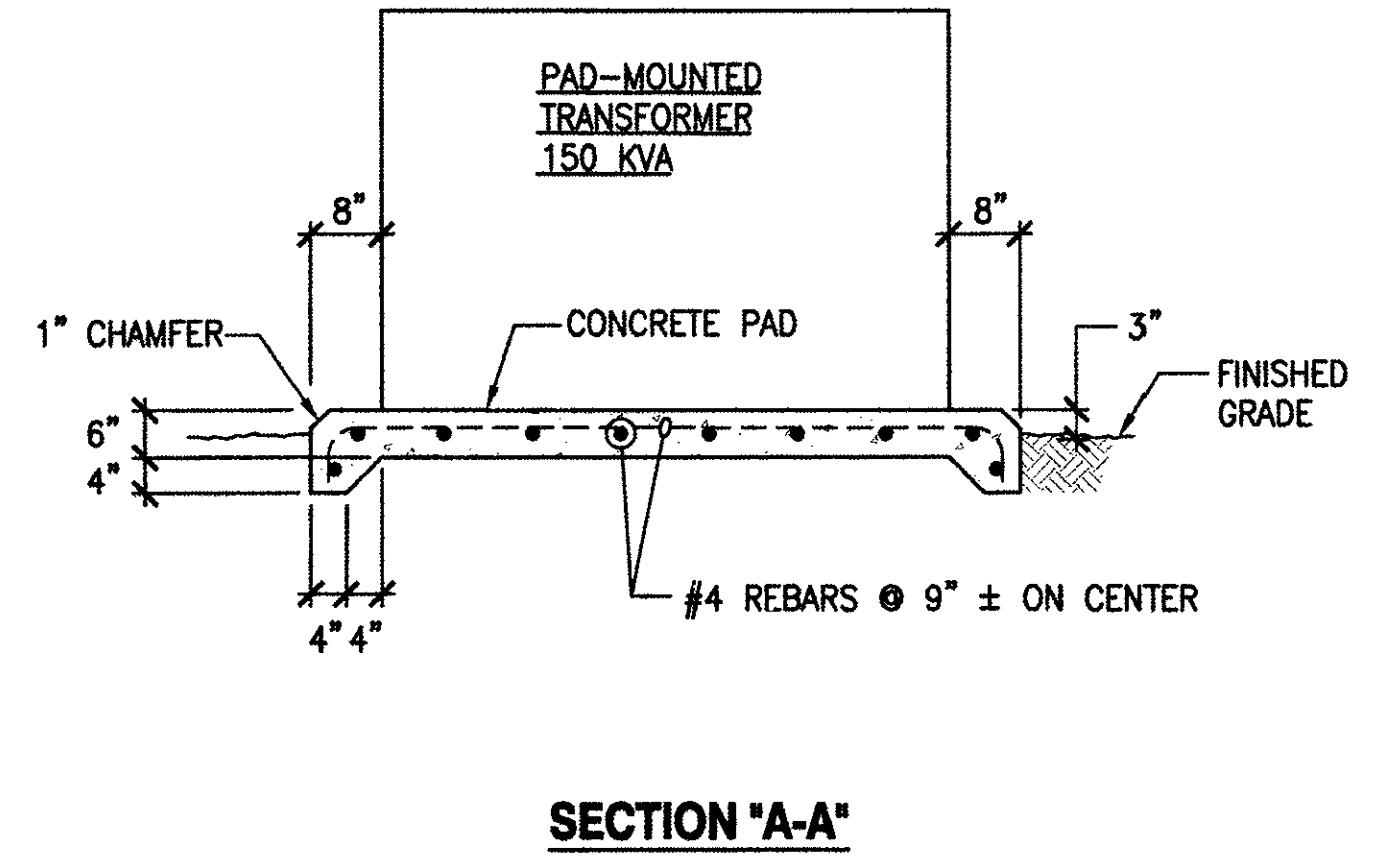
**2 DUCT SECTION FLAG CODE**  
E-22 NOT TO SCALE

DUCT SCHEDULE	
TYPE	DESCRIPTION
1	POWER, 4" PVC CONDUIT, 3#1 XLP, 15KV
2	POWER, 4" PVC CONDUIT, 4-750KCMIL, 1#1 GND
3	POWER, 2" PVC CONDUIT, (FEEDER TO PANEL "G", SEE ONE LINE DIAGRAM FOR CONDUCTOR QUANTITY AND SIZE)
4	POWER, 1" PVC CONDUIT, (WIRING FOR GENERATOR CONTROLLER/JACKET WATER HEATER/SPACE HEATER, SEE PANEL SCHEDULE FOR CONDUCTOR QUANTITY AND SIZE)
5	SPARE (POWER) 4" PVC CONDUIT WITH PULLSTRING
6	SIGNAL, 1" PVC CONDUIT, CABLING PER MANUFACTURER'S RECOMMENDATION
7	SECURITY, 1" PVC, (CABLING BY GOVERNMENT)
8	LIGHTING, 1" PVC CONDUIT, 2#12, 1#12 GND



**PLAN**

**3 TRANSFORMER PAD DETAIL**  
E-22 NOT TO SCALE



**SECTION 'A-A'**

- NOTES:**
- VERIFY DIMENSIONS WITH ACTUAL EQUIPMENT SUPPLIED.
  - CONCRETE PAD SHALL EXTEND BEYOND TRANSFORMER COOLING FINS.

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**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul A. John* DATE: 7/19/11

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: RP  
DRAWN: KL  
SAFETY:  
SECURITY:

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

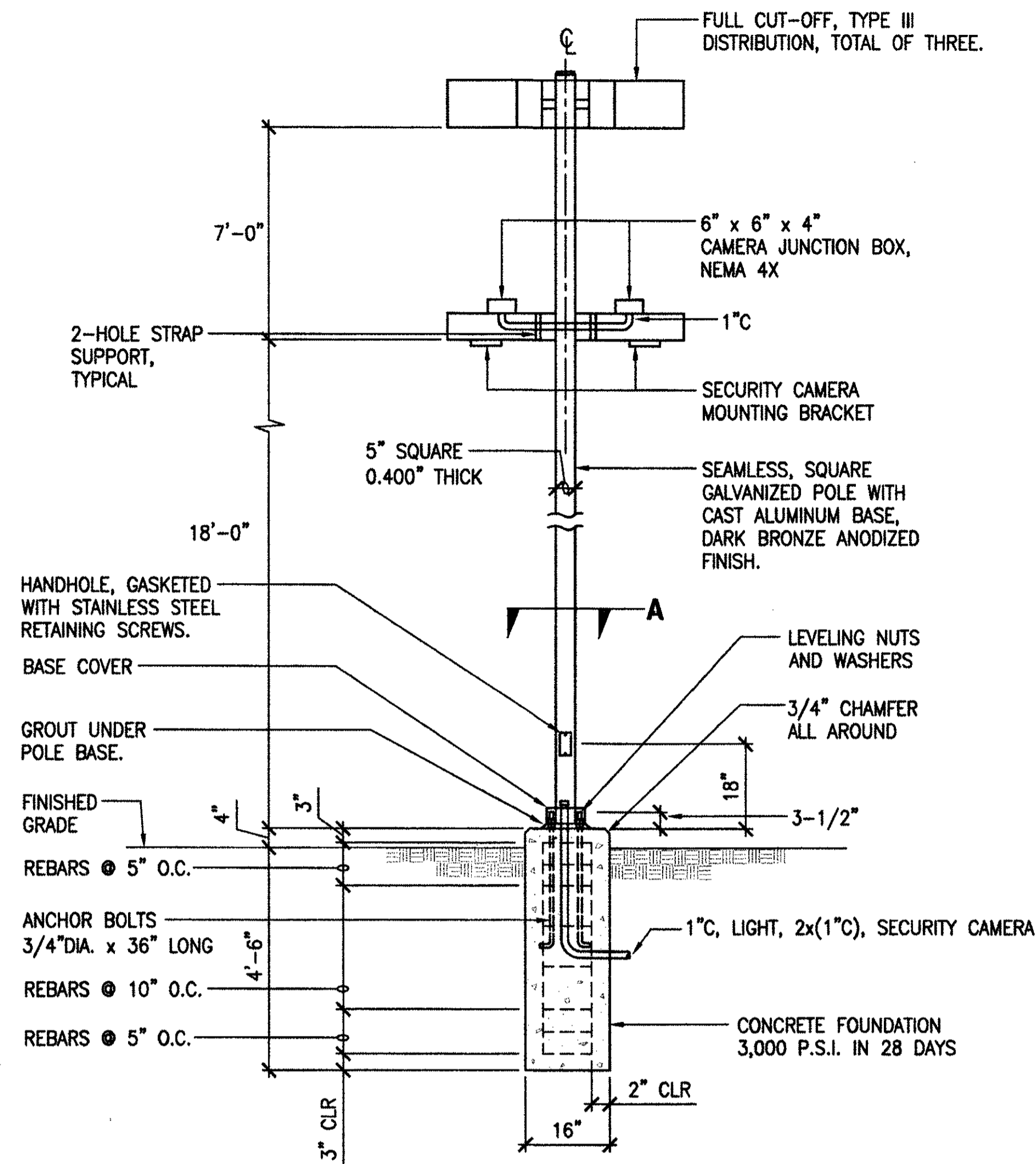
DUCT SECTION DETAILS AND TRANSFORMER PAD DETAIL

APPROVED: [Signature] DATE: JAN 31, 2011  
154 GP / ICE  
APPROVED: [Signature] 154 GP / CC  
154 GP / CC  
APPROVED: [Signature] 154 GP / CC  
154 GP / CC

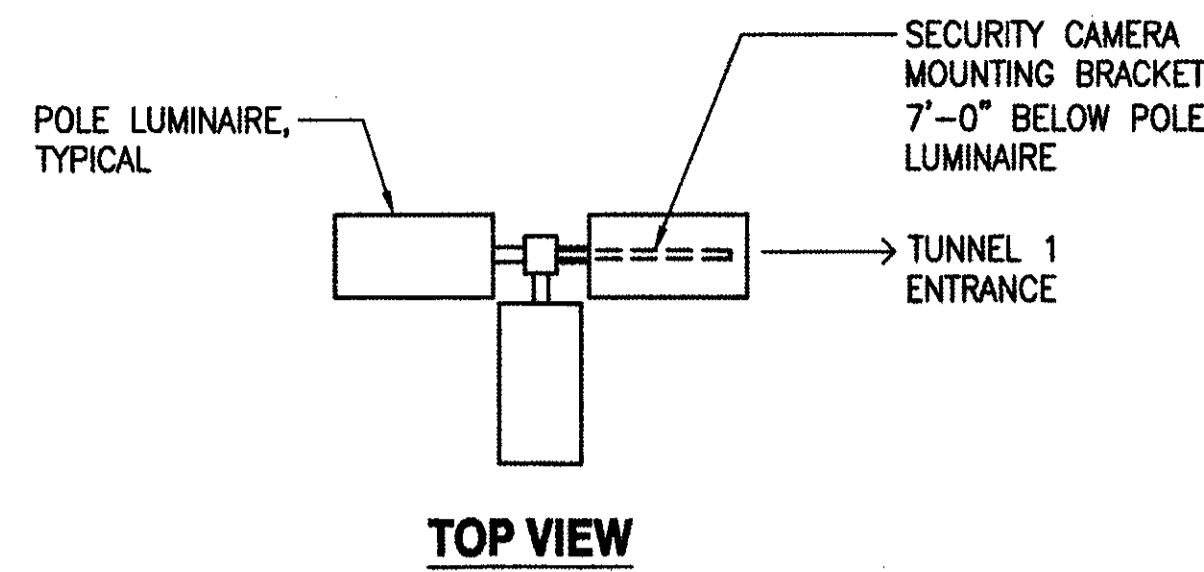
6-30-11 EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Higa*

SCALE: AS SHOWN  
DWS / E-22  
SHEET 54 OF 57



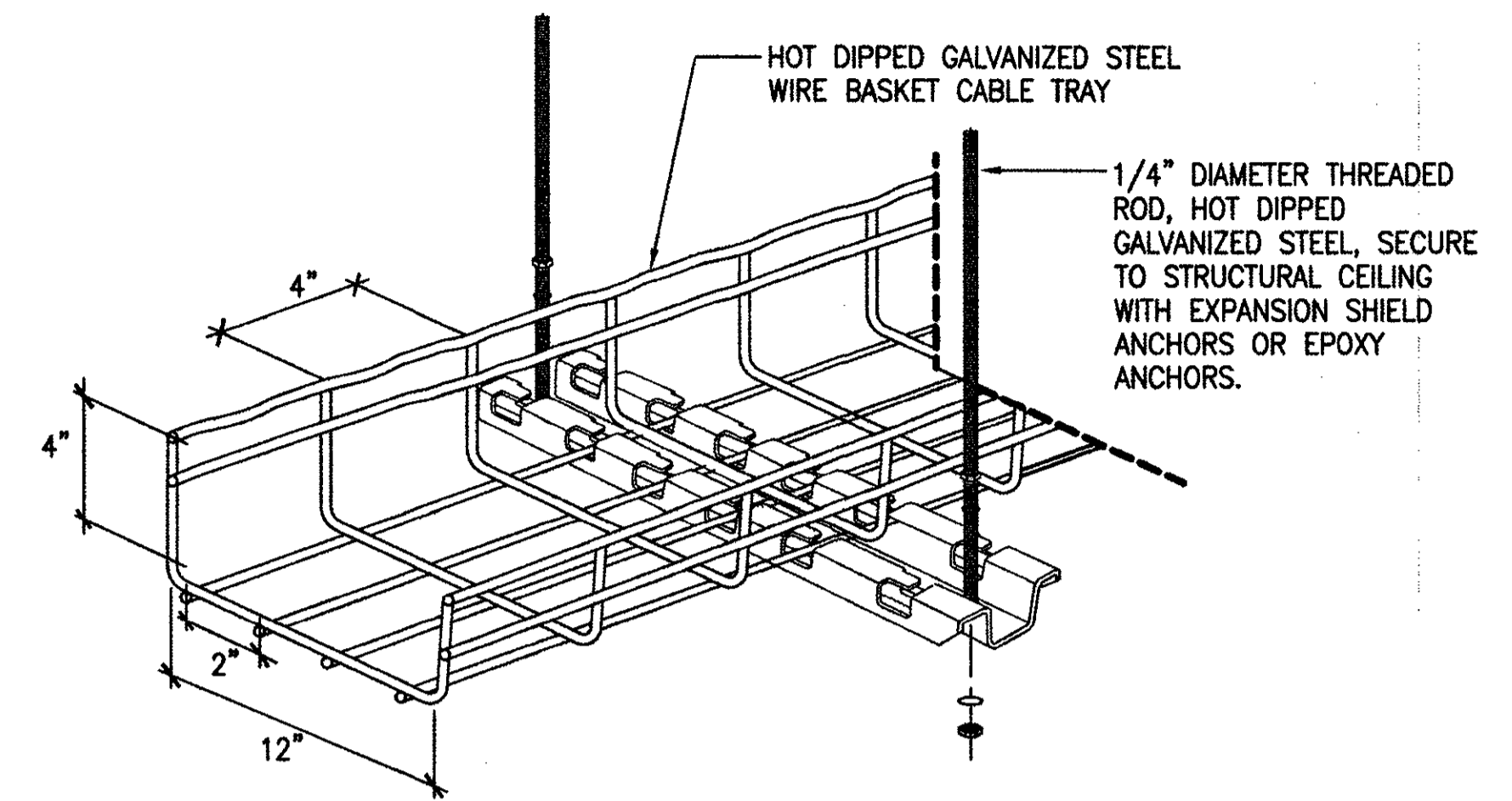
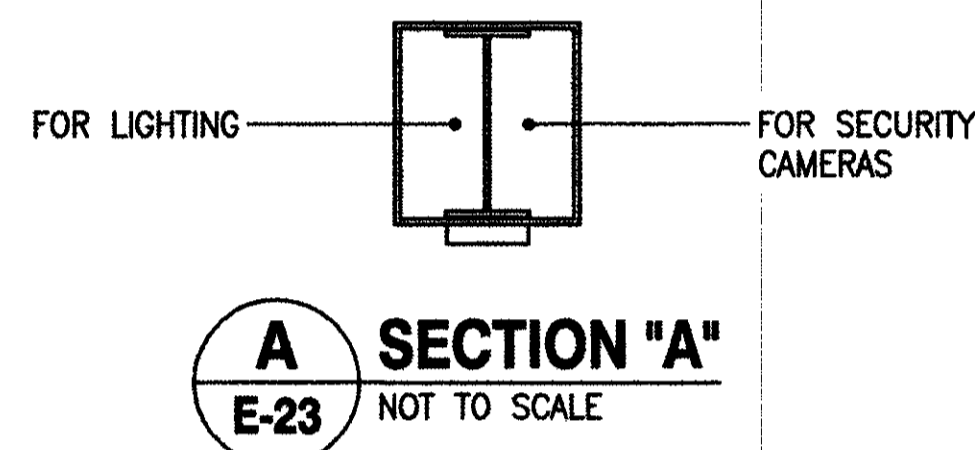
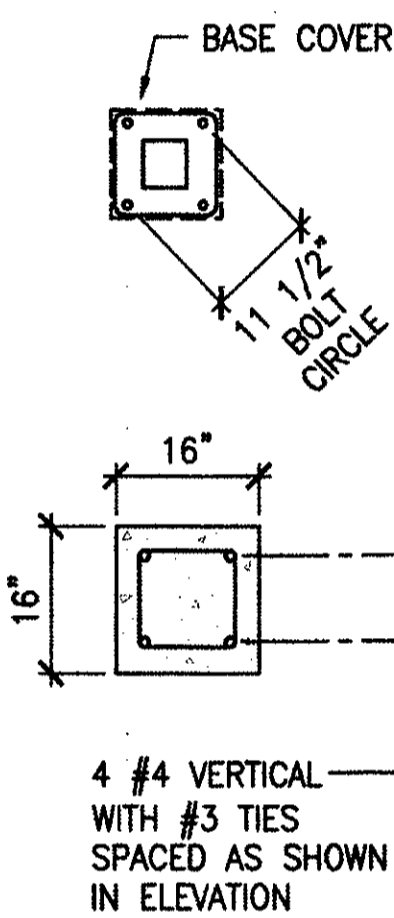


**1 LUMINAIRE/SECURITY CAMERA POLE DETAILS**  
E-23 NOT TO SCALE

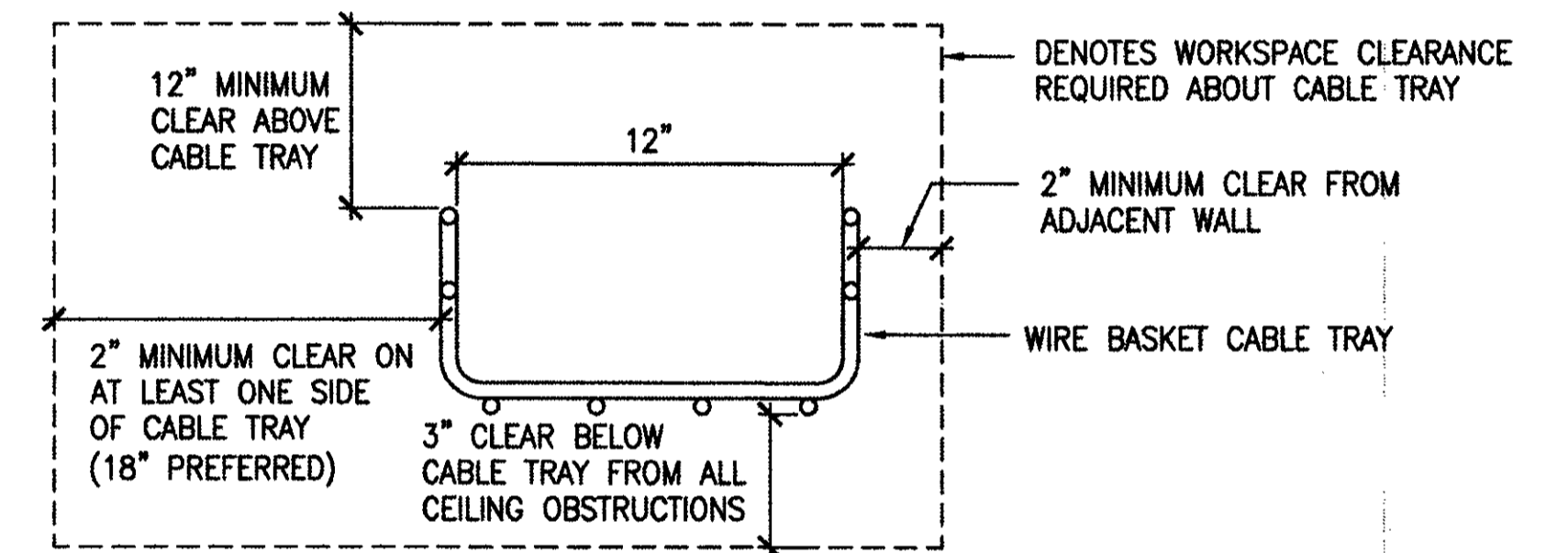


**NOTE:**

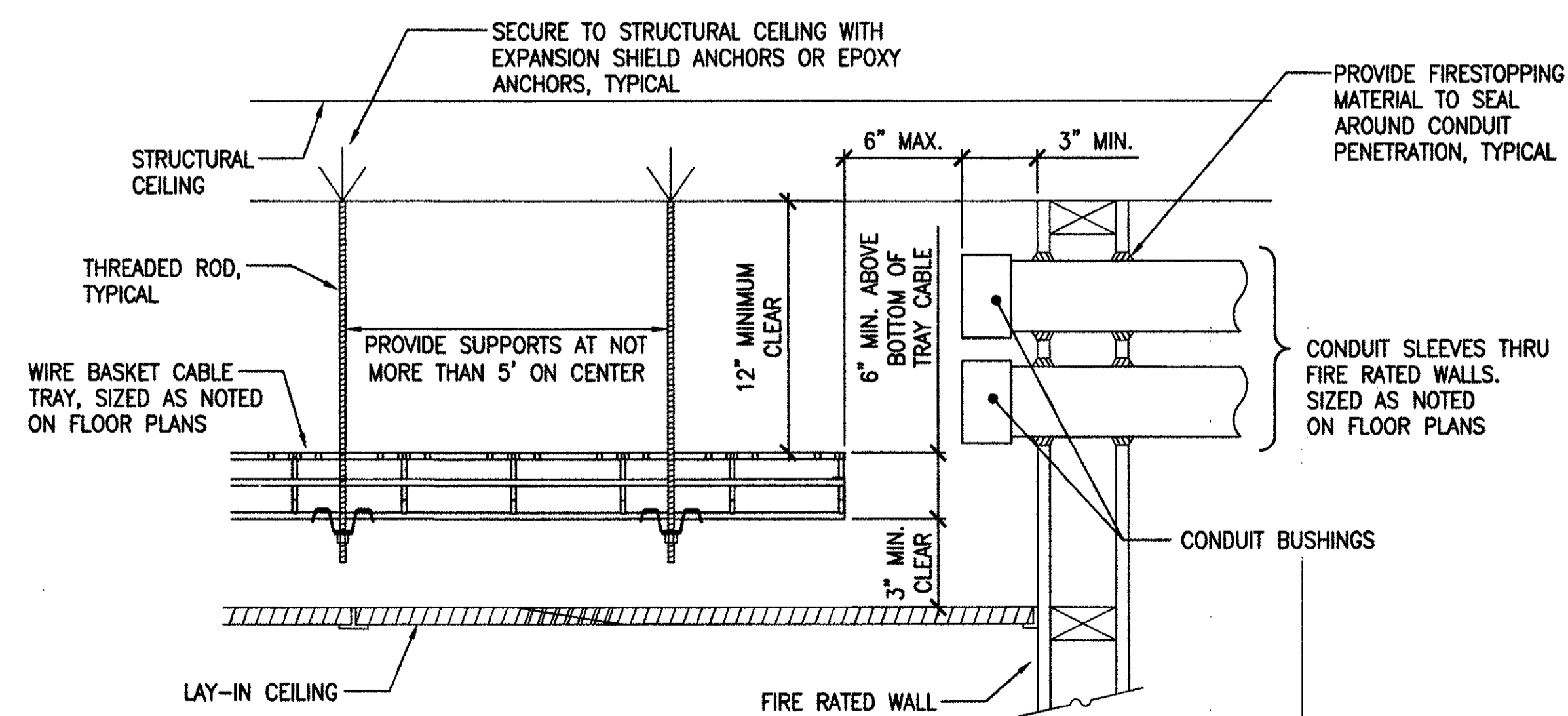
SECURITY CAMERA POLE ASSEMBLY, INCLUDING POLE, CAMERA MOUNTING ARMS AND FOUNDATION SHALL WITHSTAND WINDS UP TO 108 MPH GUSTING WITHOUT PERMANENT DEFORMATION. (HAWAII)



**3 CABLE TRAY SUPPORT DETAIL - 2**  
E-23 NOT TO SCALE



**4 CABLE TRAY WORKSPACE CLEARANCES**  
E-23 NOT TO SCALE



**2 CABLE TRAY SUPPORT DETAIL - 1**  
E-23 NOT TO SCALE

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
SIGNATURE: *Paul S. Higa* DATE: 7/15/14

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

**RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.**

**TIMOTHY S. HIGA**  
LICENSED PROFESSIONAL ENGINEER  
No. 5791-E  
HAWAII, U.S.A.

6-30-11 EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Higa*

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: BS  
DRAWN: KL  
SAFETY: [blank]  
SECURITY: [blank]

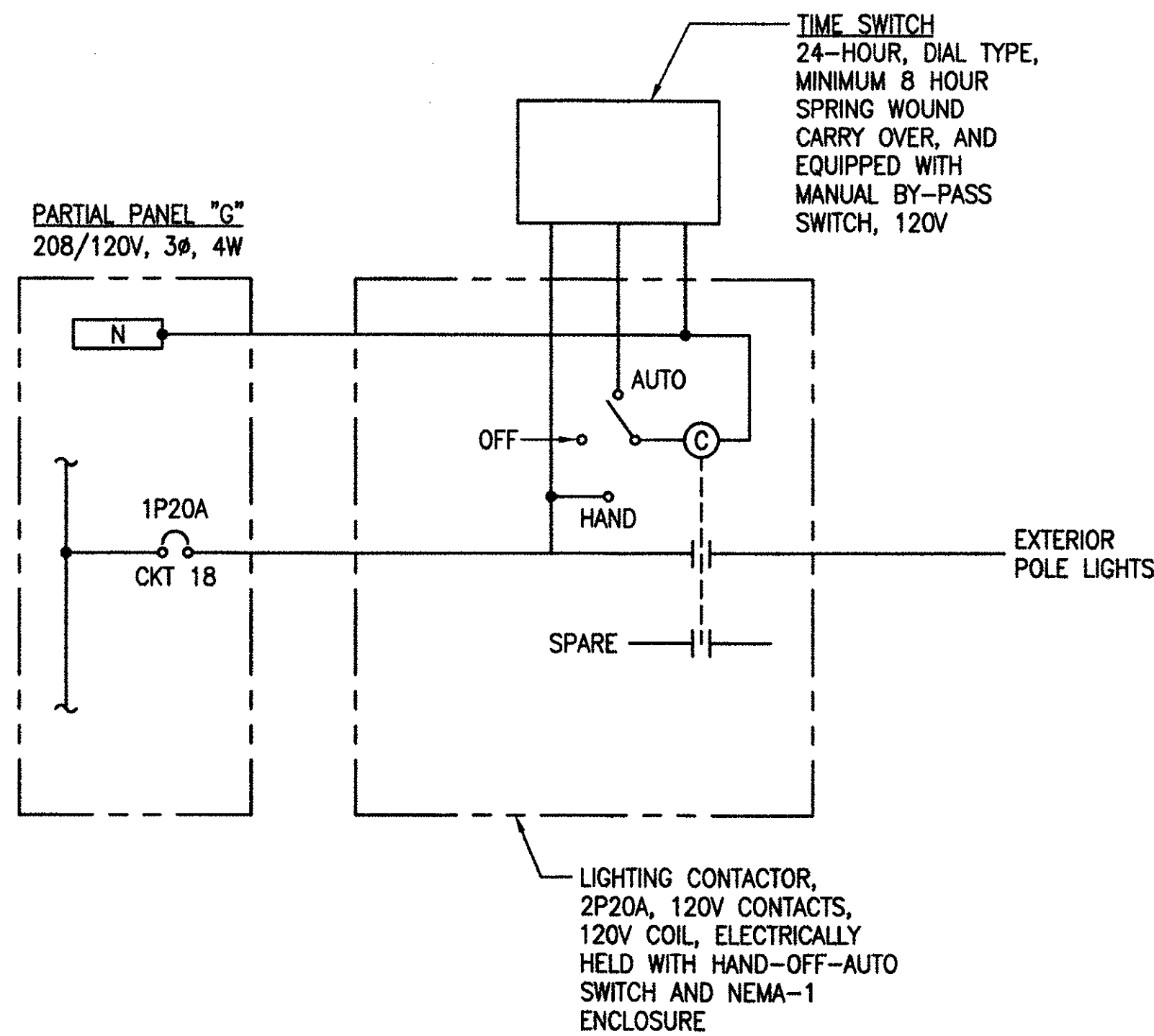
BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

LUMINAIRE/SECURITY CAMERA POLE AND CABLE TRAY DETAILS

APPROVED: [blank]	APPROVED: [blank]	DATE: JAN 31, 2011
154 GP / RCE	154 GP / CC	SCALE: AS SHOWN
APPROVED: [blank]	APPROVED: [blank]	DWG / E-23
154 GP / CC	154 GP / CC	SHEET 55 OF 57

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.



**NOTE:**

VERIFY TIMING SCHEDULE WITH HIARNG.

**1 EXTERIOR LIGHTING CONTROL DIAGRAM**  
E-24 NO SCALE

LUMINAIRE SCHEDULE					
TYPE	DESCRIPTION	LAMPS	TYPE	DESCRIPTION	LAMPS
1	FLUORESCENT RECESSED 2 x 4 WITH ACRYLIC LENS, PAINTED AFTER FABRICATION, ELECTRONIC T8 PROGRAMMED START BALLAST, UNIVERSAL VOLTAGE COLUMBIA #4PS24 SERIES, OR APPROVED EQUAL	3-32W T-8 4100K	11	EXISTING RECESSED DOWNLIGHT INCANDESCENT, REPLACE INCANDESCENT LAMP WITH SCREW-IN COMPACT FLUORESCENT LAMP, UNIVERSAL VOLTAGE	1-28W HELICAL SCREW-IN CFL 4100K
2	EXISTING FLUORESCENT RECESSED 2 x 4 REPLACE T-12 LAMPS WITH 32W T-8 LAMPS, REPLACE T-12 LAMP BALLAST WITH ELECTRONIC T-8 PROGRAMMED START BALLAST, UNIVERSAL VOLTAGE	2-32W T-8 4100K	12	EXISTING FLUORESCENT PENDANT MOUNTED, REPLACE T-12 LAMPS WITH 32W T-8 LAMPS, REPLACE T-12 LAMP BALLAST WITH ELECTRONIC T-8 PROGRAMMED START BALLAST, UNIVERSAL VOLTAGE	2-32W T-8 4100K
3	EXISTING FLUORESCENT RECESSED 2 x 4 REPLACE T-12 LAMPS WITH 32W T-8 LAMPS, REPLACE T-12 LAMP BALLAST WITH ELECTRONIC T-8 PROGRAMMED START BALLAST, UNIVERSAL VOLTAGE	3-32W T-8 4100K	13	EXISTING FLUORESCENT WALL MOUNTED STRIP, REPLACE T-12 LAMPS WITH 32W T-8 LAMPS, REPLACE T-12 LAMP BALLAST WITH ELECTRONIC T-8 PROGRAMMED START BALLAST, UNIVERSAL VOLTAGE	2-32W T-8 4100K
4	EXISTING FLUORESCENT RECESSED 2 x 4 REPLACE T-12 LAMPS WITH 32W T-8 LAMPS, REPLACE T-12 LAMP BALLAST WITH ELECTRONIC T-8 PROGRAMMED START BALLAST, UNIVERSAL VOLTAGE	4-32W T-8 4100K	14	EXISTING FLUORESCENT PENDANT MOUNTED STRIP, REPLACE T-12 LAMPS WITH 32W T-8 LAMPS, REPLACE T-12 LAMP BALLAST WITH ELECTRONIC T-8 PROGRAMMED START BALLAST, UNIVERSAL VOLTAGE	2-32W T-8 4100K
5	FLUORESCENT CEILING MOUNTED, FIBERGLASS HOUSING, ONE PIECE ACRYLIC DIFFUSER, BAKED WHITE ENAMEL, FULLY GASKETED, DAMP OR WET LOCATION LABEL, ELECTRONIC T-8 PROGRAMMED START BALLAST, UNIVERSAL VOLTAGE COLUMBIA #LUN4 SERIES OR APPROVED EQUAL	2-32W T-8 4100K	15	SIMILAR TO TYPE 1 EXCEPT FURNISHED WITH 2 LAMPS COLUMBIA #4PS24 SERIES OR APPROVED EQUAL	2-32W T-8 4100K
6	CEILING BOX MOUNTED CFL, WATER/BUG TIGHT GASKETING, MEDIUM BASE PORCELAIN SOCKET, CLEAR GLASS GLOBE WITH PROTECTIVE GUARD, CAST ALUMINUM HOUSING, PLATINUM SILVER PROTECTIVE FINISH, 120V HUBBELL #VBGC-300, OR APPROVED EQUAL	1-28W HELICAL SCREW-IN CFL 4100K	16	REMOVE EXISTING EMERGENCY LUMINAIRE. REPLACE WITH NEW EMERGENCY LUMINAIRE, TWO (2) 7W LAMPS, THERMOPLASTIC BRIGHT WHITE FINISH, 1.5 HOUR BATTERY OPERATION, 120V, PROVIDE CORD AND NEMA 5-15P PLUG WHERE INDICATED TO BE PLUGGED INTO RECEPTACLE. DUAL LITE EZ-21, OR APPROVED EQUAL	2-7W
7	EXISTING FLUORESCENT SURFACE WRAPAROUND REPLACE T-12 LAMPS WITH 32W T-8 LAMPS, REPLACE T-12 BALLAST WITH ELECTRONIC T-8 PROGRAMMED START BALLAST, UNIVERSAL VOLTAGE	2-32W T-8 4100K	17	REMOVE EXISTING EXIT SIGN. REPLACE WITH NEW THERMOPLASTIC LED EXIT SIGN, RED LETTERS SINGLE/DOUBLE FACE, SOLID STATE CHARGER WITH LOW VOLTAGE DISCONNECT, 2 HOUR EMERGENCY OPERATION. DUAL LITE LXURWE, OR APPROVED EQUAL	LED
8	EXISTING FLUORESCENT SURFACE WRAPAROUND REPLACE T-12 LAMP WITH 32W T-8 LAMP, REPLACE T-12 BALLAST WITH ELECTRONIC T-8 PROGRAMMED START BALLAST, UNIVERSAL VOLTAGE	3-32W T-8 4100K	18	POLE MOUNTED FULL CUT-OFF LED, DIE-CAST ALUMINUM HOUSING, POSITIVE CAM-LATCH, VULCANIZED SILICONE GASKET SEALS, CLEAR 3/16" THICK TEMPERED GLASS, REPLACEABLE LED MODULES, POLYESTER POWDER COAT DARK BRONZE FINISH, TYPE III DISTRIBUTION, 120V KIM WARP9 3ST SERIES, OR APPROVED EQUAL	1-140W LED 3500K
9	EXISTING FLUORESCENT SURFACE WRAPAROUND REPLACE T-12 LAMPS WITH 32W T-8 LAMPS, REPLACE T-12 BALLAST WITH ELECTRONIC T-8 PROGRAMMED START BALLAST, UNIVERSAL VOLTAGE	4-32W T-8			
10	EXISTING PENDANT MOUNTED INCANDESCENT, REPLACE INCANDESCENT LAMP WITH SCREW-IN COMPACT FLUORESCENT LAMP, UNIVERSAL VOLTAGE	1-28W HELICAL SCREW-IN CFL 4100K			

**AS BUILT**  
PAUL'S ELECTRICAL CONTRACTING LLC  
*Paul A. Paul* 7/11/14  
SIGNATURE DATE

REVISION NO	DESCRIPTION	DATE	BY	CHK'D

RICHARD MATSUNAGA & ASSOCIATES ARCHITECTS INC.

DEPARTMENTS OF THE ARMY AND AIR FORCE  
NATIONAL GUARD OF HAWAII  
OFFICE OF THE ENGINEER, FT. RUGER, HAWAII

DESIGNED: BS  
DRAWN: KL  
SAFETY:  
SECURITY:

BLDG 407 (BATTERY 407) ELECTRICAL UPGRADE

LUMINAIRE SCHEDULE AND EXTERIOR LIGHTING CONTROL DIAGRAM

APPROVED: [Signature] DATE: JAN 31, 2011  
154 OP / BCE  
APPROVED: [Signature] SCALE: AS SHOWN  
NAME / CC: [Signature] SHEET: E-24  
APPROVED: [Signature] SHEET: 56 of 57  
TAG - HWHA 154 CES / CES PROJ ENGR

IF SHEET IS LESS THAN 22 x 34 IT IS A REDUCED PRINT-SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

TIMOTHY S. HIGA  
LICENSED PROFESSIONAL ENGINEER  
No. 5791-E  
HAWAII, U.S.A.

6-30-11 EXP. 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Timothy S. Higa*

WIRE SIZE (AWG)		120/208 VOLTS, 3 PHASE, 4 WIRE 600 AMP MAIN BREAKER MIN AIC: 10,000 AIC MOUNTING: SURFACE REQ'D OPTIONS: PROVIDE SEPARATE COPPER BUS												WIRE SIZE (AWG)		
CKT NO	USE	CKT BKR POLE/AMP	CONNECTED LOAD (KVA)			CKT BKR AMP/POLE	USE	CKT NO	USE	CKT BKR POLE/AMP	CONNECTED LOAD (KVA)			CKT BKR AMP/POLE	USE	CKT NO
			PHASE A	PHASE B	PHASE C						PHASE A	PHASE B	PHASE C			
4/0	1	3	14.8	12.5		3		2	4/0							
4/0	3	200		12.8	13.1	225	PANEL "N"	4	4/0							
2	7	3	3.0	5.9		3	PANEL "103"	8	4							
2	9	100		3.0	5.7	70		10	4							
2	11	3	9.0	5.5		3	PANEL "104"	12	4							
2	13	100		9.0	4.6			14	4							
2	15	3	10.0	5.7		3	PANEL "G"	16	4							
2	17	100		10.0	5.5	125		18	4							
2	19	3						20	1/0							
2	21	100		10.0	5.5			22	1/0							
2	23	100		10.0	5.9	125		24	1/0							
1/0	25	2	6.0	-		3	SPARE	26	-							
1/0	27	100		6.0	-			28	-							
4	29	2		3.0	-	70		30	-							
4	31	40	3.0	-			PFB	32	-							
	33	1	-	-	-	-	PFB	34	-							
	35	1	-	-	-	-	PFB	36	-							
	37	1	-	-	-	-	PFB	38	-							
	39	1	-	-	-	-	PFB	40	-							
	41	1	-	-	-	-	PFB	42	-							
CONNECTED LOAD/PHASE			75.4	69.5	67.7											
TOTAL CONNECTED LOAD			212.6 KVA													
DEMAND FACTOR			0.7													
TOTAL DEMAND LOAD			148.8 KVA= 413.0 AMPS													

WIRE SIZE (AWG)		120/208 VOLTS, 3 PHASE, 4 WIRE 100 AMP MAIN LUGS ONLY MIN AIC: 10,000 AIC MOUNTING: SURFACE REQ'D OPTIONS: PROVIDE SEPARATE COPPER BUS												WIRE SIZE (AWG)		
CKT NO	USE	CKT BKR POLE/AMP	CONNECTED LOAD (KVA)			CKT BKR AMP/POLE	USE	CKT NO	USE	CKT BKR POLE/AMP	CONNECTED LOAD (KVA)			CKT BKR AMP/POLE	USE	CKT NO
			PHASE A	PHASE B	PHASE C						PHASE A	PHASE B	PHASE C			
12	1	20	0.4	0.4		20	RCPT - RM 103B	2	12	20	1	RCPT - RM 103B	4	12		
12	3	20				20	RCPT - RM 103B	4	12	20	1	RCPT - RM 103B	4	12		
12	5	20				20	RCPT - RM 103B	6	12	20	1	RCPT - RM 103B	6	12		
12	7	20	0.4	0.4		20	RCPT - RM 103B	8	12	20	1	RCPT - RM 103B	8	12		
12	9	20				20	RCPT - RM 103B	10	12	20	1	RCPT - RM 103B	10	12		
12	11	20	0.4	0.4		20	RCPT - RM 103A	12	12	20	1	RCPT - RM 103A	12	12		
12	13	20				20	RCPT - RM 103A	14	12	20	1	RCPT - RM 103A	14	12		
12	15	20	0.4	0.4		20	RCPT - RM 103A	16	12	20	1	RCPT - RM 103A	16	12		
12	17	20				20	RCPT - RM 103A	18	12	20	1	RCPT - RM 103A	18	12		
12	19	20	0.4	0.4		20	RCPT - PROJ	20	12	20	1	RCPT - PROJ	20	12		
12	21	15	0.4	0.7		15	FCU-2	22	12	15	1	FCU-2	22	12		
12	23	15				15	FCU-1	24	12	15	1	FCU-1	24	12		
12	25	20	1.7	1.0		20	SPARE - A/C CONTROLS	26	-	20	1	SPARE	26	-		
12	27	20	0.4	1.0		20	SPARE	28	-	20	1	SPARE	28	-		
-	29	20				20	SPARE	30	-	20	1	SPARE	30	-		
CONNECTED LOAD/PHASE			5.9	4.9	5.7											
TOTAL CONNECTED LOAD			16.5 KVA													
DEMAND FACTOR			0.8													
TOTAL DEMAND LOAD			13.2 KVA= 36.7 AMPS													

WIRE SIZE (AWG)		120/208 VOLTS, 3 PHASE, 4 WIRE 100 AMP MAIN LUGS ONLY MIN AIC: 10,000 AIC MOUNTING: SURFACE REQ'D OPTIONS: PROVIDE SEPARATE COPPER BUS												WIRE SIZE (AWG)		
CKT NO	USE	CKT BKR POLE/AMP	CONNECTED LOAD (KVA)			CKT BKR AMP/POLE	USE	CKT NO	USE	CKT BKR POLE/AMP	CONNECTED LOAD (KVA)			CKT BKR AMP/POLE	USE	CKT NO
			PHASE A	PHASE B	PHASE C						PHASE A	PHASE B	PHASE C			
12	1	20	0.4	0.4		20	RCPT - RM 104B	2	12	20	1	RCPT - RM 104B	4	12		
12	3	20				20	RCPT - RM 104B	4	12	20	1	RCPT - RM 104B	4	12		
12	5	20				20	RCPT - RM 104B	6	12	20	1	RCPT - RM 104B	6	12		
12	7	20	0.4	0.4		20	RCPT - RM 104B	8	12	20	1	RCPT - RM 104B	8	12		
12	9	20				20	RCPT - RM 104A	10	12	20	1	RCPT - RM 104B	10	12		
12	11	20	0.4	0.4		20	RCPT - RM 104A	12	12	20	1	RCPT - RM 104A	12	12		
12	13	20				20	RCPT - RM 104A	14	12	20	1	RCPT - RM 104A	14	12		
12	15	20	0.4	1.5		20	L - RM 104	16	12	20	1	L - RM 104	16	12		
12	17	20	0.4	0.6		20	FCU-4	18	12	20	1	FCU-3	18	12		
12	19	20	1.0	1.0		20	SPARE - A/C CONTROLS	20	-	20	1	SPARE	20	-		
-	21	20	1.0	1.0		20	SPARE	22	-	20	1	SPARE	22	-		
-	23	20				20	SPARE	24	-	20	1	SPARE	24	-		
-	25	1	-	-	-	-	PFB	26	-	-	1	PFB	26	-		
-	27	1	-	-	-	-	PFB	28	-	-	1	PFB	28	-		
-	29	1	-	-	-	-	PFB	30	-	-	1	PFB	30	-		
CONNECTED LOAD/PHASE			5.5	4.6	4.6											
TOTAL CONNECTED LOAD			14.7 KVA													
DEMAND FACTOR			0.8													
TOTAL DEMAND LOAD			11.8 KVA= 32.7 AMPS													

WIRE SIZE (AWG)		120/208 VOLTS, 3 PHASE, 4 WIRE 225 AMP MAIN LUGS ONLY MIN AIC: 10,000 MOUNTING: SURFACE REQ'D OPTIONS: 2-SECTION PANEL . PROVIDE SEPARATE COPPER BUS												WIRE SIZE (AWG)		
CKT NO	USE	CKT BKR POLE/AMP	CONNECTED LOAD (KVA)			CKT BKR AMP/POLE	USE	CKT NO	USE	CKT BKR POLE/AMP	CONNECTED LOAD (KVA)			CKT BKR AMP/POLE	USE	CKT NO
			PHASE A	PHASE B	PHASE C						PHASE A	PHASE B	PHASE C			
-	1	1	0.6	0.6		1	EXST - CKT	2	-	1	EXST - CKT	2	-			
-	3	1		0.6	0.6		EXST - CKT	4	-	1	EXST - CKT	4	-			
-	5	1			0.4	0.6	EXST - CKT	6	-	1	EXST - CKT	6	-			
-	7	1	0.4	0.6			EXST - CKT	8	-	1	EXST - CKT	8	-			
-	9	1	0.4	1.0			SPARE	10	-	20	1	SPARE	10	-		
-	11	1		0.4	1.0		SPARE	12	-	20	1	SPARE	12	-		
-	13	1	0.6	1.0			SPARE	14	-	20	1	SPARE	14	-		
-	15	1	0.4	0.4			RCPT - EXT	16	10	20	1	RCPT - EXT	16	10		
-	17	1		0.6	0.4		RCPT - EXT	18	10	20	1	RCPT - EXT	18	10		
-	19	1	0.4	0.4			RCPT - EXT	20	10	20	1	RCPT - EXT	20	10		
-	21	2	2.5	0.4			RCPT - EXT	22	10	20	1	RCPT - EXT	22	10		
-	23	1		2.5	0.4		RCPT - EXT	24	10	20	1	RCPT - EXT	24	10		
-	25	1	0.2	0.4			RCPT - EXT	26	10	20	1	RCPT - EXT	26	10		
-	27	1	0.6	0.4			RCPT - EXT	28	10	20	1	RCPT - EXT	28	10		
-	29	1	0.4	0.4			RCPT - EXT	30	10	20	1	RCPT - EXT	30	10		
-	31	1	0.5	0.4			RCPT - EXT	32	10	20	1	RCPT - EXT	32	10		
-	33	1	0.4	0.4			RCPT - EXT	34	10	20	1	RCPT - EXT	34	10		
-	35	1		0.6	0.4		RCPT - EXT	36	10	20	1	RCPT - EXT	36	10		
-	37	1	0.8	0.4			RCPT - EXT	38	10	20	1	RCPT - EXT	38	10		
-	39	1	0.4	0.4			RCPT - EXT	40	10	20	1	RCPT - EXT	40	10		
-	41	1	0.4	0.4			RCPT - EXT	42	10	20	1	RCPT - EXT	42	10		
10	43	1	0.6	1.0			SPARE	44	-	20	1	SPARE	44	-		
10	45	1	0.6	1.0			SPARE	46	-	20	1	SPARE	46	-		
10	47	1	0.6	1.0			SPARE	48	-	20	1	SPARE	48	-		
10	49	1	0.6	1.0			SPARE	50	-	20	1	SPARE	50	-		
10	51	1	0.6	1.0			SPARE	52	-	20	1	SPARE	52	-		
10	53	1	0.6	1.0			SPARE	54	-	20	1	SPARE	54	-		
12	55	20	1.0	-			PFB	56	-	20	1	PFB	56	-		